

TTI Researchers Find Innovative Ways to Use Rural Transit to Move People and Goods

The TxDOT/TTI Team: Making Roadside Safety History

Uber, Lyft and other TNCs: How Governments Are Approaching Ride-Hailing Regulation

TEXAS TRANSPORTATION

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Researcher

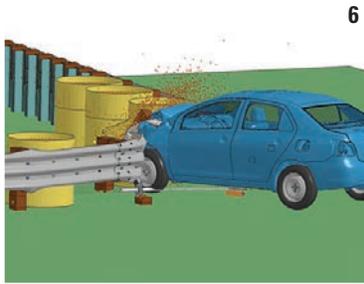
**REDEFINING
FREIGHT
MOVEMENT**



TEXAS TRANSPORTATION Researcher

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ON THE COVER: After 12 years of dedicated research, TTI Senior Research Scientist Steve Roop oversaw the first public demonstration of the Freight Shuttle System on September 9, 2016, to Texas Gov. Greg Abbott, Texas A&M University System Chancellor John Sharp and other VIPs. "From the outset," Roop says, "I thought this could work."



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TTI research is benefiting rural communities by finding new ways rural transit agencies can work more closely with package-delivery companies.

TTI Researchers Find Innovative Ways to Use Rural Transit to Move People and Goods

Texas is a big state. Serving the mobility needs of rural residents is important. Public transit plays a key role in getting people where they need to go and might play a future role in getting goods to people.

As part of a Texas Department of Transportation (TxDOT) project, researchers at the Texas A&M Transportation Institute (TTI) are finding new ways to help rural public transportation systems provide innovative goods-delivery services and produce additional revenue.

TTI Associate Transportation Researcher Zachary Elgart explains, “It all began with a question: can rural transit play a role in facilitating last-mile delivery for package companies to improve the quality of life for residents, while generating revenues for the transit system?”

Rural transit provides a basic service for people without another option. Thinking outside the box can help agencies improve not only their level of service but also the quality of life in rural areas by better integrating the agencies with the communities.

“The idea was to create a new business model for these services,” Elgart says. “It’s a real opportunity for rural transit agencies to generate more revenue and deliver packages quickly and inexpensively to those living outside the standard delivery areas of major package companies.”

This fall, researchers will work with a rural transit agency and a private package-delivery company to facilitate the launch of a pilot transit-based package-delivery program. After holding workshops with stakeholders, they created a guidebook to serve as a blueprint and will make changes to it based on lessons learned.

“The workshops taught us that there are many options available for the pilot,” Elgart says. “One agency might function as a storehouse for packages; another might deliver the packages to their final destination. There is also po-



tential for a transit agency to sell services on behalf of the package company.”

Another growth area for rural transit agencies is the market for transporting agricultural specimens, such as water or soil samples, for testing. Agricultural specimens are often

This fall, researchers will work with a rural transit agency and a private package-delivery company to facilitate the launch of a pilot transit-based package-delivery program.

time-sensitive packages that need to get to their destinations quickly and at a moment’s notice. By coordinating service with intercity bus companies, rural transit agencies can provide access to on-demand delivery services.

TxDOT Business Operations Project Manager Kelly Kirkland says, “Rural public transportation operators are very interested in innovations that can improve service and develop new funding sources. Additionally, rural transit operators’ staff and management generally reside in their service areas and are very knowledgeable about their customers’ needs. This firsthand knowledge greatly benefits the evaluation of new ideas and strategies.” ■



RPO Workshops Help Rural Agencies Identify Needs

Since 2011, TTI researchers have supported TxDOT in holding rural planning organization (RPO) workshops around Texas. The workshops enable county judges and local officials to work with TxDOT districts to identify rural transportation needs.

“The workshops help the districts by getting the RPO to start thinking from a regional perspective,” says TxDOT Transportation Planner Darcie Schipull. “Educating our RPOs benefits TxDOT by helping our rural partners understand the challenges and limitations with our transportation infrastructure and the funding available.”

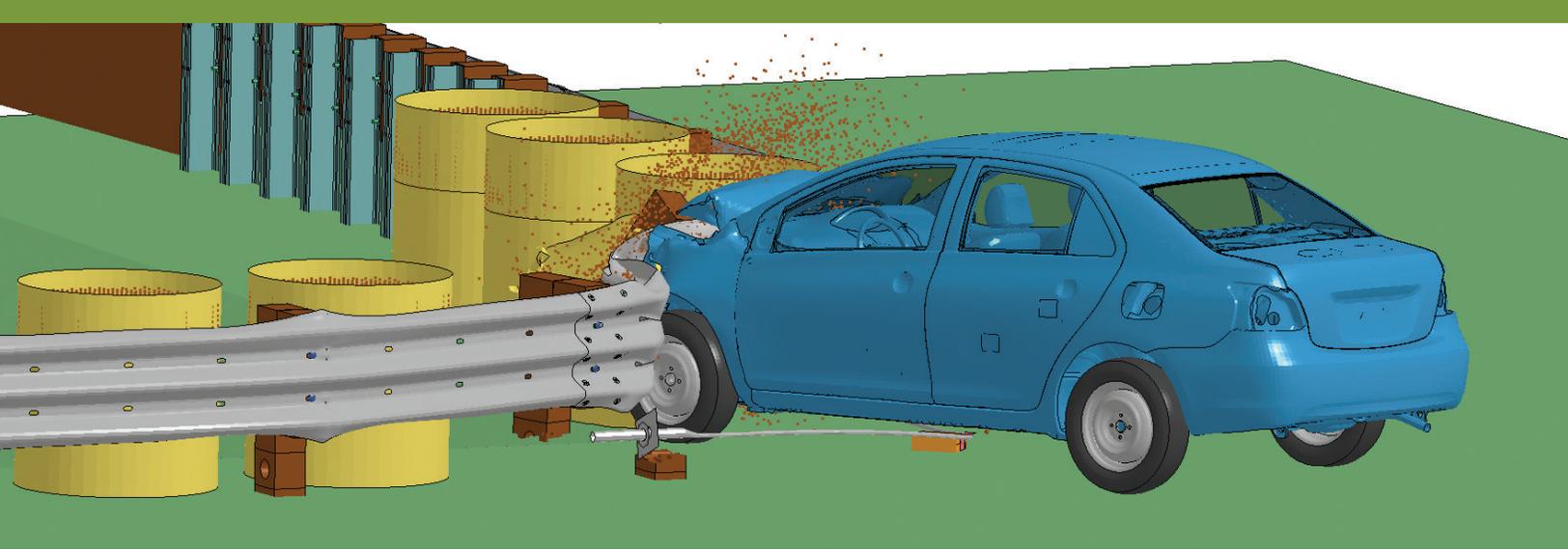
An RPO is a voluntary organization created and governed by locally elected officials responsible for local transportation decisions. RPOs address rural transportation planning priorities and advise TxDOT about areas outside the boundaries of metropolitan planning organizations.

There are 13 Texas RPOs, and the workshops have taken place in 19 locations across the state, involving dozens of county judges and local officials. The workshops originated as a part of a TxDOT research project and have continued as an implementation project and an interagency agreement.

These workshops elevate the interaction between TxDOT and local officials and help educate everyone on current issues,” says TTI Research Scientist John Overman. “It’s an opportunity to learn how to better navigate the transportation planning and programming process, which can get quite complicated.” ■



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Simulation is the first step to testing new roadside safety devices in the real world.

The TxDOT/TTI Team: Making Roadside Safety History

As the temperature hovered around 100 degrees on August 9, 2016, Texas A&M Transportation Institute (TTI) roadside safety device experts and a Texas Department of Transportation (TxDOT) transportation engineer gathered on a runway at the Texas A&M University RELLIS Campus. They were hoping to witness a historic crash test under TxDOT's Roadside Safety Device Crash-Testing Program.

Their goal was to stop a vehicle traveling at 62 miles per hour after it plowed through the nose of a short-

radius guardrail at a 25-degree angle but before it ran into a ditch directly behind the guardrail. (What's a short-radius guardrail? See the sidebar to this article.)

"Engineers from around the country have been trying to solve this problem for decades," says TTI Assistant Agency Director Dean Alberson, who's also head of TTI's Crashworthy Structures Program.

TTI Research Scientist Akram Abu-Odeh had reason to believe that his

new design would be successful. To deal with the crash-through problem, Abu-Odeh used sand-filled barrels and a cable barrier strategically placed and anchored behind the railing. With the help of advanced computer simulation, Abu-Odeh altered location and placement of the components until the device passed the test on his computer screen.

"The sand barrels and the cable are both needed to absorb and dissipate the energy of the 5,000-pound pickup truck required for the test," Abu-Odeh



The sliding base with chute design was one of the three best-performing designs.

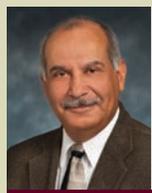
explains. “Using readily available components is important in getting this design implemented. But it first has to pass this full-scale test.”

When the truck slammed into the guardrail and then hit the barrels, sand exploded and rained down on the crash site. But the truck came to a safe and almost immediate stop, instead of heading into the steep ditch, located just 5 feet from the guardrail.

“The sand barrels and the cable are both needed to absorb and dissipate the energy of the 5,000-pound pickup truck required for the test.”

*Akram Abu-Odeh
TTI Research Scientist*

“High-speed crashes into a short-radius guardrail with a steep slope behind it happen on our roadways more often than people realize. And they are often fatal or lead to serious injury,” says Christopher Lindsey of TxDOT’s Design Division. “Because of the success of this test, I think we’re well on our way to issuing a standard in Texas. We could be seeing this short-radius guardrail treatment in use soon, perhaps in a year’s time.”



For more information, contact **Akram Abu-Odeh** at (979) 862-3379 or a-abu-odeh@tti.tamu.edu.

Where’s Your Sign?

It’s not uncommon to see signs mounted on top of concrete barriers, especially in work zones. But what happens when a crash occurs at the precise location where the sign is mounted?

In another project supported by TxDOT, Abu-Odeh developed numerous crashworthy sign-post design concepts. He tested them first with the aid of computer simulation, and TxDOT selected four concepts for further testing. All four were crash-tested using the American Association of State Highway and Transportation Officials (AASHTO) *Manual for Assessing Safety Hardware* (MASH) Test Level 3 guidelines. The three performing the best were the sliding base with chute design, the thinner-wall post with 3-inch-long slots, and the hinge and sacrificial pin design.

“The shoulder width on urban roadways is often too narrow to install the roadside signs needed to convey important information to motorists. This is especially true for signs in the median,” explains TxDOT Research Project Manager Wade Odell. “The results of this research are significant because there is a real opportunity to install signs on the concrete median barrier in order to ensure safety in the event a vehicle crashes into that barrier.” ■



Short-Radius Guardrails

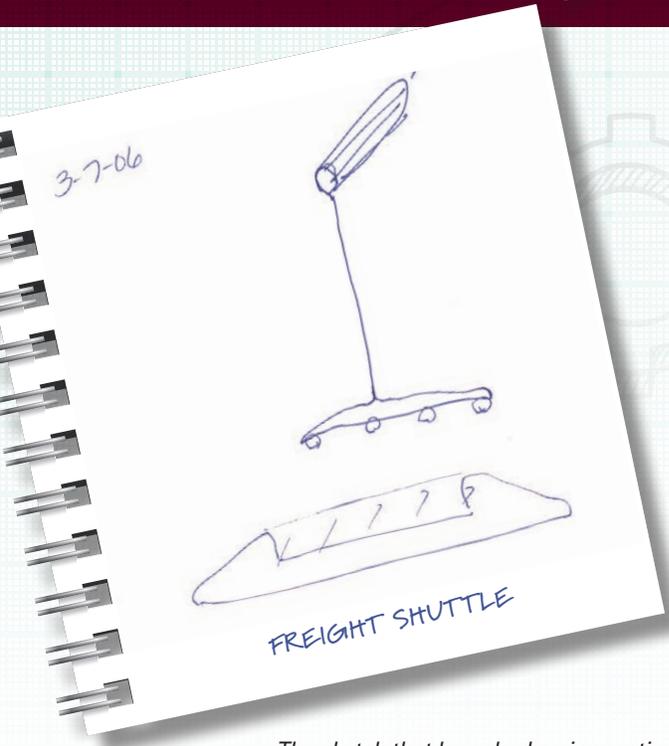
It’s a common highway configuration: a high-speed roadway is intersected by a secondary, grade-separated roadway near a bridge railing. For safety, guardrails line both roadways.

Those guardrails have to be connected, but the nature of the intersection requires they be connected with a short, curved piece of guardrail — thus the term short-radius guardrail for the roadside safety device installed.

“The length of a guardrail is important in protecting motorists who leave the roadway,” TTI Research Scientist Akram Abu-Odeh explains. “A standard, short-radius guardrail isn’t long enough to dissipate the force of a high-speed crash. So designing a treatment that will meet AASHTO MASH Test Level 3 guidelines was our goal.” ■



TRANSFORMATIVE BY DESIGN: The Autonomous Freight Shuttle Started with a Simple Drawing



The sketch that launched an innovation.

“The FSS is the result of more than a decade of research at TTI. The team’s work has produced 17 patents held jointly by the A&M System and FSI.”

TTI Agency Director Dennis Christiansen

AS LEGEND HAS IT, Southwest Airlines started with an idea sketched on the back of a napkin. And from that humble drawing grew an idea that redefined air travel.

About 30 years later, Texas A&M Transportation Institute (TTI) Senior Research Scientist Steve Roop started with his own blank sheet of paper, in search of a better way to move cargo. And from his first sketch has grown an idea that’s now a big step closer to redefining freight movement.

Along the way, he has faced more than his share of skeptics. Far more. But as the inventor of the autonomous Freight Shuttle System (FSS), Roop has proven that just because naysayers hold that something is too good to be true, that doesn’t mean it is.

That proof was realized on September 9 at the FSS test and evaluation site, where Texas Gov. Greg Abbott, with the click of a computer mouse, set the 70,000-pound Freight Shuttle System in motion for its first public demonstration. Abbott praised the partnership of university research and industry investment that made it possible.

“I would suggest that Texas A&M is the model for how universities are so much more than just a place where students go to learn,” he said. “They are laboratories where advancements are made that improve our state and literally alter the arc of America.”



Texas Gov. Greg Abbott, with (from left to right) State Sen. Charles Schwertner, State Rep. John Raney, House Transportation Committee Chairman Joe Pickett, State Rep. Kyle Kacal and State Rep. John Otto.

The first commercial example of that transformation could be under way soon at the Port of Houston Authority (PHA), where increased container traffic will continue to grow given the expansion of the Panama Canal. PHA Executive Director Roger Guenther and Roop, representing Freight Shuttle International, LLC (FSI), signed a formal agreement days before the demonstration to work together to evaluate options for deployment of the FSS at the port.

Guenther described his first introduction to the FSS concept years ago as “a very neat animation of these things moving up and down the track,” to eventually seeing a tangible working prototype. “It has transformed from this great idea to something that is really quite real,” Guenther said. “The demonstration you’ll see today of this working Freight Shuttle prototype confirms that it’s time to take the next step and dig deeper into these opportunities for deployment.”

The FSS operates on its own guideway using individual, autonomous transporters carrying truck trailers or shipping containers, powered by linear-induction electric motors. It borrows the best characteristics from both truck and rail transport, and uses only about one-third the energy required by diesel trucks.

Abbott and Guenther were joined by Texas A&M University System Chancellor John Sharp, who emphasized the A&M System’s commitment to public-private ventures.

“Great research universities are the economic drivers of the future,” Sharp said. “They have the ability to improve lives and create new industries and new companies.”

TTI Agency Director Dennis Christiansen, who’s overseen the FSS development in his 10-year tenure at the Institute, applauded the FSS research team for its innovative effort.

“I would suggest that Texas A&M is the model for how universities are so much more than just a place where students go to learn. They are laboratories where advancements are made that improve our state and literally alter the arc of America.”

Texas Gov. Greg Abbott



Texas Gov. Greg Abbott speaks at a briefing prior to the first public demonstration of the FSS. Also on stage (from left to right) :TTI Agency Director Dennis Christiansen, FSS inventor Steve Roop, PHA Executive Director Roger Guenther and Texas A&M System Chancellor John Sharp.

“The FSS is the result of more than a decade of research at TTI,” Christiansen said. “The team’s work has produced 17 patents held jointly by the A&M System and FSI.”

The FSS is being introduced at a time when the freight industry faces mounting challenges — strained rail and roadway system capacity, environmental concerns and a chronic shortage of truck drivers, to name only a few.

“There’s really no better place than the Texas A&M Transportation Institute to begin and execute work like this because this Institute has the nation’s best talent,” Roop said. “TTI supported this from an embryonic idea through the concept, and now product development.”

Beginning with that very first sketch, Roop was driven by a passion and a belief.

“From the outset,” he says, “I thought this could work.” ■



For more information, contact **Steve Roop** at (979) 845-8536 or s-roop@tti.tamu.edu.



UBER, LYFT AND OTHER TNCs:

HOW GOVERNMENTS ARE APPROACHING RIDE-HAILING REGULATION



When is a technology company not a taxicab company?

That question illustrates one of the challenges in regulating transportation network companies (TNCs), the businesses that provide prearranged rides through a digital network, most often via a smartphone app.

Since 2010, those companies have argued that they're not like traditional taxicab enterprises, and as such, they shouldn't be regulated in the same way. Opponents argue that TNCs provide the same service as taxicabs, so there's no justification for holding them to different standards. Caught in the middle are the state and local policy makers whose job it is to determine if regulation is warranted and, if so, write the rules for an industry that's growing as fast as the use of the technology that enabled it.

As with any effort to implement new regulations, it's often helpful to begin with a review of what's been done elsewhere. That's the purpose behind Policy Implications of Transportation Network Companies, the latest research offering on this topic from the

Texas A&M Transportation Institute's (TTI's) Transportation Policy Research Center. The purpose of the research, which was directed by TTI Associate Transportation Researcher Maarit Moran, is to provide Texas leaders with a comprehensive review to help inform the policy decisions addressing the operation of TNCs.

The findings reflect policies in effect as of May 2016, and future installments will provide fresh updates. As of early summer, roughly two-thirds of U.S. states had enacted laws regulating TNCs, reflecting a broad regulatory spectrum.

"We're seeing a number of commonalities in the state and local regulations for TNCs, and we're

also finding some clear distinctions through our research," says PRC Director Ginger Goodin. "The regulatory landscape is changing quickly, so helping the policy process along in Texas will require that we keep a very close eye on things as they unfold everywhere else."

Goodin and Moran described that landscape for members of the Texas House Transportation Committee on August 30, at the invitation of Rep. Joe Pickett, the committee's chairman. They presented the findings in greater detail at a forum for legislative staff at the Capitol the next day.

"The questions we fielded from legislators during our testimony pointed pretty clearly to the high

2/3 of the U.S. — 34 states have TNC laws that address or require



insurance



driver
application



background
checks



Most states require a zero-tolerance drug- and alcohol-use policy for drivers.

level of interest they have in TNC regulation,” Moran said. “So we intend to continue our work, knowing it can help to inform the discussions that lawmakers will be having.”

All the 34 states with current TNC laws in some way address insurance, and nearly all require some form of driver application and background checks. TNCs, however, have strongly opposed fingerprinting as part of that requirement.

Most, but not all, of the states require a zero-tolerance drug- and alcohol-use policy for drivers. Only two states and Washington, D.C., require TNCs to provide driver training. Most of the states prohibit TNCs from accepting

street hails or any ride solicitation that doesn't use a TNC app, and about half prohibit TNC drivers from accepting cash payments.

TNC regulation is also taking shape at the local level, though most of the states with laws in place also include a policy that preempts or limits local jurisdictions' TNC authority. In Texas, 10 cities have passed ordinances between late 2014 and May 2016. Several of those ordinances were passed despite opposition from industry players over policies related to background checks, reporting requirements and vehicle restrictions. In four Texas cities, disputes over the nature of those background checks prompted TNCs Uber and/or Lyft to suspend operations.

Texas lawmakers have signaled their intention to focus on state-level

“We’re seeing a number of commonalities in the state and local regulations for TNCs, and we’re also finding some clear distinctions through our research.”

*Ginger Goodin,
TTI PRC Director and
Senior Research Engineer*

TNC regulation when the legislature convenes for its next Regular Session in January 2017. How they choose to address policy will be informed by the lessons learned from other states and cities. ■



For more information, contact **Ginger Goodin** at (512) 407-1114 or goodin@tti.tamu.edu, or **Maarit Moran** at (512) 407-1130 or m-moran@tti.tamu.edu.



“The questions we fielded from legislators during our testimony pointed pretty clearly to the high level of interest they have in TNC regulation. So we intend to continue our work, knowing it can help to inform the discussions that lawmakers will be having.”

*Maarit Moran,
TTI Associate Transportation Researcher*

TTI TEACHES CAMPERS ABOUT TRANSPORTATION



For more than 20 years,

researchers at the Texas A&M Transportation Institute (TTI) have educated future generations about transportation engineering. These programs range from K-12 science, technology, engineering and mathematics (STEM) activities to the basics of how TTI researchers conduct their studies.

This summer, TTI welcomed students from the George Bush Presidential Library and Museum summer camps and the Texas A&M University College of Engineering Camp BUILD. Institute researchers engaged young minds from seven summer camps.

“An important part of TTI’s mission is the education of the next generation of transportation professionals,” says TTI Agency Director Dennis Christiansen. “I can’t think of a better way to expose young people to transportation careers than a visit to TTI to hear firsthand from Institute researchers how they got into the field and what kind of work they do.”

The George Bush Presidential Library and Museum offers summer camps



One activity had campers construct and race puff mobiles. Students get to be creative and work as a team, designing a vehicle that can travel the farthest distance possible when a team member puffs on it.



Students from the George Bush Presidential Library and Museum summer camps spent the day at TTI learning about transportation research through presentations and hands-on activities.

each year to five groups of students aged 7 to 11. These week-long camps center on the topic of the museum’s current exhibit. This year’s exhibit “Driven to Drive” focused on the history of transportation and included a one-day field trip to TTI.

“We were so glad to partner with TTI this year,” says Monica Lerma, education specialist at the George Bush Presidential Library and Museum. “The researchers presented the kids many hands-on opportunities to learn. They really enjoyed all the activities — especially Bob the crash test dummy.”

Campers learned about transportation research through interactive presentations from TTI staff and received hands-on lessons about traffic signals, transportation and the environment, transportation safety, signs, and crash testing.

TTI Research Engineer Melisa Finley says, “I really enjoy watching students’ eyes light up when they learn something new, and they always provide a lot of creative thoughts about transportation. I hope that by exposing students to STEM activities and transportation safety, we have encouraged the

next generation of engineers and transportation researchers.”

Finley has been a part of TTI’s educational outreach for nine years. Through camps like these, she’s reached over 2,300 students, including girls, minority groups and the economically disadvantaged.

Camp BUILD is a one-week summer camp designed for high-school juniors and seniors. Students are given the opportunity to explore civil engineering as a major course of study at Texas A&M University and tour department facilities and TTI. This year, students learned about transportation engineering, crash testing, and transportation safety and toured TTI’s Visibility Laboratory. Students also attended a breakout session with TTI videographers on the use of video in transferring transportation technology to practitioners.

TTI has been a part of Camp BUILD since it began in 2013. The application process for the camp is similar to a college application — students must submit transcripts and essays. ■



For more information, contact Samantha Atchison at (979) 845-7576 or s-atchison@tti.tamu.edu.





Advancing the Vision

The Texas A&M Transportation Institute (TTI) Advisory Council is comprised of a small group of high-level transportation and business 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*. ■



Al Alonzi
Texas Division
Administrator,
Federal Highway
Administration
(FHWA)
Austin, Texas

Al Alonzi provides executive direction over the \$3.2 billion annual FHWA federal-aid apportionment to Texas, one of the largest and most complex federal-aid programs in the nation. He leads a multidisciplinary staff of 50 professionals to provide guidance to state- and local-funding recipients unified in the primary objective of remaining a relevant partner in Texas, while advancing national transportation goals.

He formerly served as deputy division administrator for the FHWA Texas Division Office. He has served FHWA in multiple capacities in several field offices and the Washington, D.C., headquarters for over 24 years. ■



Bob Jones
President and CEO,
Jones Engineering
Solutions, LLC
Houston, Texas

Bob Jones recently formed Jones Engineering Solutions, LLC, after serving as president, CEO and founding partner of Jones & Carter, Inc., a 350-employee, Texas-owned, civil engineering company, for many years. His expertise includes municipal, land development and transportation infrastructure; master planning; political coordination; finance and cost evaluation; program development and management; and regulatory assistance. He works with local, state and national entities to enhance transportation and transportation funding.

Jones is president-elect of the Texas Council of Engineering Companies and serves on the boards of the North Houston Association and West Houston Association. He is a former commissioner of the Texas Building and Procurement Commission and a member of the Texas A&M University Dwight Look College of Engineering Advisory Council. ■



Linda Watson
President/
CEO, Capital
Metropolitan
Transportation
Authority
Austin, Texas

Linda Watson manages the day-to-day operations of Capital Metropolitan Transportation Authority, which serves 10 communities and has an annual operating budget of \$246 million, 1,500 employees and 500 vehicles. Formerly, she was CEO of LYNX, the Central Florida Regional Transportation Authority; general manager of the Corpus Christi Regional Transportation Authority; and assistant general manager of the Fort Worth Transportation Authority.

Watson serves on the Federal Transit Administration Transit Research Analysis Committee; ITS America Board; Transportation Research Board; and National Research Council, National Academy of Sciences. She previously served on the American Public Transportation Association Executive Committee. ■

Goodin Represents TRB at Capitol Hill AV/CV Roundtable

On June 22, Ginger Goodin, director of TTI's Transportation Policy Research Center, helped lead a broad discussion of policy issues that will help shape the federal government's role in the development of automated and connected vehicles (AV/CVs). Congressman Dan Lipinski (D-IL) hosted the event in Washington, D.C. Goodin represented the Transportation Research Board (TRB), offering the panel what Congressman Lipinski described as an objective and balanced perspective that helped to bring together the various viewpoints being discussed.

The roundtable's participants focused on identifying relevant policy issues and working toward collaborative solutions. Specific discussion topics included technology deployment, research and development, infrastructure requirements, regulatory matters, and cybersecurity. ■

Little Presents ASCE Turner Lecture

Dallas Little, Senior Research Fellow at TTI, presented the Francis C. Turner Lecture at the 2016 American Society of Civil Engineers (ASCE) International Conference on Transportation and Development. The conference was held in Houston, Texas, June 26–29. Little's lecture was entitled Two Practical Applications of Chemo-Mechanics to Extend the Life of Our Asphalt Pavement Infrastructure. Giving the lecture is part of the Turner Award.



ASCE President Bob Stevens (left) and T&DI President Lenor Bromberg (right) present the 2016 Turner Award to Dallas Little.

"To receive this award, named after such a giant in transportation, is a tremendous honor," Little says. "This was indeed a highlight in my career. Turner was known worldwide for his contributions — and he was an Aggie."

Little has dedicated much of his career to extending the life of our roadways. He was the first named Senior Research Fellow at TTI and is a Texas A&M University Regents Professor. He also holds the E.B. Snead Endowed Chair in Civil Engineering. Like Turner, Little has received numerous awards during his career and is a Distinguished Member of ASCE. ■

Christiansen Honored with ITE Matson Award

TTI Director Dennis Christiansen was awarded the Institute of Transportation Engineers (ITE) Theodore M. Matson Award on August 15 during the ITE Annual Meeting in Anaheim, California.

Christiansen became a pioneer in high-occupancy vehicle lane development as part of his research in traffic operations and transportation planning. He has served as international president of ITE, the Council of University Transportation Centers, and the Research and Education Division of the American Road and Transportation Builders Association. He is a member of the ITS America Board and was selected as a Regents Fellow, the highest honor bestowed by The Texas A&M University System Board of Regents.

"Dr. Christiansen has worked tirelessly for more than four decades to further research in the areas of traffic operations, transportation and transit planning, and traffic engineering," said ITE Executive Director



Attending the Matson Award presentation are (left to right) ITE President Paula Flores Benway, ITE Vice President Shawn Leight, Dennis Christiansen and ITE Past President John Kennedy.

and Chief Executive Officer Jeffrey F. Paniati. "He exemplifies what the Theodore M. Matson Award stands for, namely outstanding contributions in the field of traffic engineering." ■

Fitzpatrick Receives Award Named for TTI Director Christiansen

Kay Fitzpatrick, senior research engineer and manager of TTI's Roadway Design Program, accepted the inaugural Dennis Christiansen Award for Excellence in Managed Lane Applied Research bestowed by the Transportation Research Board (TRB). Fitzpatrick received the award at the 15th International Conference on Managed Lanes in Miami, Florida, held May 4–6. She led the recently completed National Cooperative Highway Research Program Project 15-49, Guidelines for Implementing Managed Lanes.

The award is named for current TTI Director Dennis Christiansen, a pioneer of high-occupancy vehicle (HOV) lane research who successfully petitioned TRB to create an HOV committee in 1987, which later evolved into the managed lanes committee.

"It's pure coincidence that a TTI researcher is the first winner of the Dennis Christiansen Award," says Chuck Fuhs, co-chair of the TRB Managed Lanes Committee. "Dennis Christiansen has been involved in managed lanes since its beginnings in the 1970s, and that's why naming an award after him was so logical — and probably overdue."

"This award stands out for me because it is named for the current director of TTI," notes Fitzpatrick. "It shows a continuity in TTI's leadership in this topic area. Dennis was a key player in the HOV arena when research first started, and TTI researchers continue to be key players in advancing the professional knowledge on this topic." ■

Kruse Named to Maritime Transportation System Advisory Committee



Kruse

Director of TTI's Center for Ports and Waterways Jim Kruse has been appointed to the Maritime Transportation System National Advisory Committee (MTSNAC). Kruse's two-year term is effective July 1, 2016. MTSNAC members provide advice and recommendations to the U.S. secretary of transportation on all matters related to the nation's marine transportation system.

"This appointment is certainly a highlight of my career, and I feel honored to serve with the other committee members," Kruse says. "Among the priorities we'll tackle over the next two years is the expansion of the Marine Transportation System for freight and passengers and identifying ways to reduce congestion and increase mobility throughout the domestic transportation system." ■

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

NRC Selects Zmud for Lifetime National Associate Honor



Zmud

The National Research Council (NRC) has selected TTI Senior Research Scientist Johanna Zmud as a member of its 2016 Class of National Associates for her voluntary "extraordinary service" to the Transportation Research Board (TRB). "National Associate" is an honorary, lifetime title bestowed by the National Academies of Sciences, Engineering and Medicine.

Zmud is the director of TTI's Washington, D.C., office and has 30 years of transportation research and consulting experience. She's internationally known for her work related to mobility analysis, technology applications for travel-data collection, emerging data management issues and the impacts of new technologies on travel demand. Zmud has served on numerous TRB committees and groups over the past 20 years, including as chair for the Travel Survey Committee, the Data and Information Section, and the Policy and Organization Group.

"This is a tremendous honor from TRB and totally unexpected," Zmud says. "I've been involved with TRB because of the opportunities to contribute my expertise, to learn, and to network with transportation researchers around the globe." ■

Brewer Named Eno Fellow

The Eno Center for Transportation has selected TTI Associate Researcher Marcus Brewer as an Eno Fellow. The designation highlights the top transportation graduates in the country. As part of the honor, Brewer attended the 2016 Eno Future Leaders Development Conference in Washington, D.C., designed for students in transportation-related fields. Following the conference, Brewer was among 20 students named Eno Fellows.

"Being selected to attend this conference and receive the Eno Fellow designation is a great honor," Brewer says. "It's a privilege to be associated not only with current elite graduate students, but so many past Eno Fellows from Texas A&M and TTI." ■

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.

RESEARCH VIDEOS

Access the research topics listed below via the URLs shown.

Freight Movement Redefined:
<https://vimeo.com/183842437>

Making Traffic Demand Models More Realistic Representations of Congestion:
<https://vimeo.com/170486486>

Continued Implementation of High Performance Thin Overlays in Texas Districts:
<https://www.youtube.com/watch?v=gV37q-HfWk>

Using Public Transportation to Facilitate Last Mile Package Delivery:
https://www.youtube.com/watch?v=9ZC6Tk_CPOo

TTI Enhances Its Proving Ground with New Research Facilities:
<https://vimeo.com/131557369>

Statewide Implementation of Pave-IR:
<https://www.youtube.com/watch?v=dp-Eo-oN7ag>

TECHNICAL REPORTS

Construction and Installation of Travel Time Signs on I-35 in Austin, by Jerry Ullman, **5-9049-05-1**, August 12, 2016.

Continued Implementation of High Performance Thin Overlays in Texas Districts: Odessa District Workshop, by Tom Scullion, **5-5598-05-WS1**, August 11, 2016.

Crash Test and Evaluation of 3-ft Mounting Height Sign Support System, by Nauman Sheikh, **9-1002-15-1**, July 28, 2016.

Crash Test and Evaluation of Temporary Wood Sign Support System for Large Guide Signs, by Dusty Arrington, **9-1002-15-4**, July 28, 2016.

Creep Behavior of Soil Nail Walls in High Plasticity Index (PI) Soils: Technical Report, by Marcelo Sanchez, **0-6784-1**, August 4, 2016.

Disruptive Technologies and Transportation Final Report, by Jason Wagner, **PRC 15-45 F**, June 2016.

Executive Plan Summary, An ITS Strategic Plan for Texas, by Beverly Kuhn, **0-6672-3**, July 28, 2016.

Identifying Best Practices for Managing Operating Costs for Rural and Small Urban Transportation Systems: Technical Report, by Suzie Edrington, **0-6694-1**, August 4, 2016.

Installation of Dynamic Travel Time Signs and Efforts to Obtain and Test a Graphical Route Information Panel (GRIP) Sign in Austin, by Jerry Ullman, **5-9049-03-7**, August 12, 2016.

Maintaining Project Consistency with Transportation Plans Throughout the Project Life Cycle with an Emphasis on Maintaining Air Quality Conformity: Technical Report, by Reza Farzaneh, **0-6758-1**, July 22, 2016.

MASH TL-3 Crash Testing and Evaluation of the TxDOT T631 Bridge Rail, by William Williams, **9-1002-12-12**, July 22, 2016.

Maximizing Mitigation Benefits: Research to Support a Mitigation Cost Framework — Final Report, by Kristi Miller, **0-6762-01-1**, August 3, 2016.

Performance Evaluation and Specification of Trackless Tack, by Bryan Wilson, **0-6814-1**, September 12, 2016.

Policy Implications of Transportation Network Companies, by Maarit Moran, **PRC-2016-1**, July 2016.

Preferential Lane Use for Heavy Trucks Final Report, by Sue Chrysler, **PRC 15-39 F**, July 2016.

Sediment and Erosion Control Laboratory Facility Expansion, by Jet McFalls, **5-9048-01**, August 16, 2016.

Traffic Control Device Evaluation Program: Simulator Evaluation of Sponsored Changeable Message Signs and In-Situ Evaluation of Rumble Strip Alternatives, by Adam Pike, **9-1001-14-2**, July 28, 2016.

PROJECT SUMMARY REPORTS AND PRODUCTS

Collection of Materials and Performance Data for Texas Flexible Pavements and Overlays, by Lubinda Walubita, **0-6658-S**, August 1, 2016.

Completion of Construction and Installation of Travel Time Signs on I-35 in Austin, by Jerry Ullman, **5-9049-05-S**, August 30, 2016.

Creep Behaviour of Soil Nail Walls in High Plasticity Index (PI) Soils, by Marcelo Castilla, **0-6784-S**, August 3, 2016.

Develop Metrics of Tire Debris on Texas Highways, by Raul Avelar Moran, **0-6860-S**, July 22, 2016.

Guidelines on Design and Construction of High Performance Thin HMA Overlays: Workshop, by Cindy Estakhri, **5-5598-05-WS2**, August 11, 2016.

Inspection Guide for Column Splice Regions Affected by Premature Concrete Deterioration, by Joe Bracci, **0-5722-P2**, July 22, 2016.

ITS Strategic Plan for Texas, by Beverly Kuhn, **0-6672-P1**, July 28, 2016.

Maximizing Mitigation Benefits, by John Overman, **0-6762-01-S**, July 29, 2016.

Performance Evaluation and Specification of Trackless Tack, by Bryan Wilson, **0-6814-S**, July 26, 2016.

Recommended RAP/RAS Performance Prediction Program: Tx-Recycol, by Fujie Zhou, **0-6823-P1**, July 28, 2016.