A WORLD OF RESEARCH
ON THE COVER: TTI’s global research is expanding. Photo Credit: NASA Goddard Space Flight Center (NASA-GSFC). Photo Illustration: TTI.

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TTI: Going forward, going global

The Texas Transportation Institute is pursuing a number of initiatives. One of those, which is highlighted in this issue of the Researcher, involves identifying whether there is an appropriate and meaningful role for TTI in conducting international research and, if so, effectively developing that role.

For a variety of reasons, this appears to be a good time to explore such an opportunity. The A&M System has a number of initiatives going on in the international arena, including having a campus in Qatar. We are frequently contacted by our international counterparts as they seek information and try to identify and implement the state of the art. The breadth and depth of TTI’s capabilities make us an attractive point of contact. Serving in such a role is consistent with our mission, and we have many staff members with the expertise and interest to be involved in international activities.

In an effort coordinated by TTI Associate Director Ed Seymour, TTI is reaching across the oceans to share our research with the world. We are learning and collaborating with the best transportation experts from other continents and countries. As we extend the hand of friendship to new colleagues worldwide, we also further goals that transcend borders—safer transportation, improved infrastructure, better mobility, improved air quality and greater value for every transportation dollar spent.

We marked 2007 with an international research initiative and set a goal of sustaining a program of international research of at least $1 million per year by 2010. With leadership from Ed and the diverse array of researchers on TTI’s International Initiatives Team, we know that the partnerships we form today create the international transportation progress necessary for tomorrow.

Paraguay, China, India, Mexico, Qatar, Argentina, France, the United Kingdom—these are just a few of the places you can find TTI involvement worldwide. And we will continue to seek other friendships, partnerships and opportunities around the globe.

If you have thoughts, ideas or suggestions, please feel free to send me an e-mail (dennis-c@tamu.edu).
International Initiatives: An Integral Part of TTI’s Strategic Plan

The Texas Transportation Institute’s primary vision is to continue serving as a premier, higher-education-affiliated transportation research institute sought out by organizations from all over the world to solve transportation problems. Strategies to ensure this effort are detailed in TTI’s strategic plan.

Strategy 2.2.3—Pursue the development of an international research program.

The viability of a meaningful international program of research will be pursued during FY ’07 and FY ’08, with an objective of sustaining a program of at least $1 million per year by FY ’10. An internal committee has been established in FY ’07 to develop by the end of calendar year 2007 a strategic plan for this effort.

Strategy 3.3.3—Participate to the extent reasonable in advancing the 3/2 program with Texas A&M International University.

The proposed 3/2 program is a collaboration between Texas A&M International and TAMU. Prospective engineering students may spend their first three years at A&M International, and then transfer to TAMU to complete the degree in two years. In cooperation with the College of Engineering, TTI is prepared to offer positions to students transferring to Texas A&M under this program who have an interest in transportation.

TTI’s International Initiatives Team

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One of the first tools the team developed was a survey to categorize TTI’s diversity of research disciplines and international backgrounds. The survey produced a database researchers can use to link up with other researchers who speak a variety of native languages—a helpful tool when negotiating international agreements.

Seymour says the team is also developing a roadmap researchers can use to find public agencies around the world, such as the World Bank and the Asian Development Bank, that sponsor international transportation research. Additional efforts are under way in Mexico, Paraguay and a number of other countries.

“For example, we formed a partnership with the Indian Institute of Technology Madras (IIT Madras) in Chennai, India,” says Seymour. “We also linked up with Texas A&M Distinguished Professor Kumbakonam Rajagopal—a graduate of IIT Madras—to identify research avenues and activities in India of value to India, A&M and TTI.”

Transportation is a thread that knits countries and economies together worldwide. Innovations in congestion relief, safety and the reliability of roadway systems—many developed at the Texas Transportation Institute (TTI)—have made just-in-time inventories and next-day deliveries commonplace.

And while reaching across oceans and continents to share and implement ideas is not new, recent efforts at TTI to exchange research internationally are at an all-time high. TTI researchers are literally taking flight to shake hands, share research and pave the way to new partnerships.

“TTI researchers do world-class work in their areas of expertise,” says TTI Associate Director Ed Seymour. “And while many of our sponsors are here in Texas, a number of international avenues exist to research and exchange best practices worldwide.”

Seymour, who coordinates the International Initiatives Team (IIT) at TTI, says the team’s ultimate goal is to give researchers the tools, strategies and policies they need to make international research easier.

“Looking at the big picture means incorporating global research into TTI’s strategic plan,” says Seymour. “After we did that, we organized a team that looks at all of the aspects of international partnerships with public entities.”

The Texas Transportation Institute’s new, international research initiative takes flight
Seymour is pursuing similar partnerships in Qatar and China, along with TTI Research Engineers Shawn Turner, Kevin Balke and others.

“The international presence of Texas A&M University in Qatar and other countries demonstrates our commitment to solving problems and answering research questions no matter where challenges exist in the world today,” says Texas A&M’s Vice Chancellor and Dean of Engineering, G. Kemble Bennett. “TTI’s efforts in Qatar and elsewhere are a strong and visible expression of that commitment.”

Seymour emphasizes that exchanging research and best practices around the world is far from a one-way street. For example, Turner is exploring the data that can be collected by the vast number of taxi cabs in China featuring global positioning systems (GPS) that track travel and location. These data could prove helpful in creating a congestion and mobility report for China.

“We’re also partnering with some developing countries because one view is that these countries are the most challenged and have the most needs for safety and congestion improvement,” says Seymour. “In addition, their resources are often constrained, and we believe that these countries are where the transportation innovations will be the greatest.”

“Good practices are good practices, no matter where they are,” says Seymour. “We want to learn from the best practices around the world, and countries and organizations across the globe want to do the same thing.”

To learn more about TTI’s International Initiatives, visit: http://tti.tamu.edu/about_tti/international/.

TTI in...

India

A five-year program with the Indian Institute of Technology Madras in Chennai, India, consists of faculty and student exchanges, collaborative research and educational programs designed to improve the transportation infrastructure in India. Researchers are exploring computer modeling of roadway networks, development of sensors for vehicles and improvements in roadway materials.

Qatar

Texas A&M University and the Qatar Foundation entered into an agreement in 2003 to bring the University’s top-ranked engineering programs and research to the Gulf Region by establishing a branch campus in Education City, a consortium of educational and research institutions. Now entering its fourth academic year, Texas A&M University at Qatar, which is funded by the Qatar Foundation, has grown to a student body of nearly 200 and faculty of 48. Earlier this year, the university moved into its new 595,000-square-foot engineering building. Graduate programs will also be offered in 2007, and a research program is being developed. Based on relationships developed through the campus, TTI has the opportunity to help create a Qatar Transportation Institute.

China

In 2006, TTI and the Beijing Transportation Research Center entered into a three-year cooperative research agreement to help improve the city’s urban transport system. The work under way includes assessing Beijing’s methods of transportation planning, modeling and design, and traffic operations and management to identify areas in which TTI can help develop solutions to the city’s traffic challenges.
Congestion management solutions

Researchers look to improve North American trade

Moving commodities efficiently is vital to the economies of North American countries. According to the San Diego Association of Governments and the California Department of Transportation, more than 80 percent of the total trade in North America is accomplished by truck and rail. In 2005, post-9/11 security requirements, combined with inadequate infrastructure capacity, cost the United States (U.S.) and Mexican economies an estimated $6 billion in combined gross output. Between 1993 and 2005, Mexican merchandise exports to the U.S. grew by 400 percent (in current dollars), and U.S. exports to Mexico grew by 245 percent.

As the three main producing nations, Mexico, the U.S., and Canada form the trading block for North America. Other trading blocks, like the European Union, have cohesive transportation plans that maximize system efficiencies, which makes doing business across national borders as cost-effective as possible.

Freight transportation provides the means by which goods are moved from manufacturing or ports of entry to the final consumer. Thirteen years after the North American Free Trade Agreement (NAFTA) was ratified, “the big three” are discovering that to compete in the global economy, they need to better communicate their transportation system needs to improve how freight is transported across national borders.

Teaming with the Texas Department of Transportation and the Federal Highway Administration (FHWA), Texas Transportation Institute (TTI) researchers have been working on several projects to improve international trade along the U.S.-Mexico border. The first order of business is to come up with a unified way to measure the time it takes to get from one side of the border to the other.

“This important research will help FHWA consistently and objectively measure system performance,” explains Ian Grossman, a spokesman for FHWA. “TTI has the necessary expertise in developing strategies to improve the North American transportation network, and we are excited to partner with them on the border research program.”

As an example of how important effective transportation communication is to North America’s economy, take the largest commodity traded in North America: auto parts. In some cases, the parts are made in Mexico and shipped to Canada for assembly, and the final product is sold in or exported from the U.S. Ensuring the smooth flow of auto parts across borders will improve system efficiencies and decrease production costs, thereby helping to create more cost-competitive automobiles for sale.

“Ultimately, we want to create a border congestion index, or BCI,” explains TTI Research Scientist Juan Villa. “This would let us identify the impact of congestion at the border.”

All this begins with the BCI currently under development by TTI researchers. Once a measure for how these discrete transportation systems currently work together is established, improvements can then be made to maximize North America’s transportation network efficiencies.

“The BCI will help improve the overall efficiency of the continental transportation system,” says Villa. “That, in turn, will make North America more competitive in the world market.”
The Texas Transportation Institute (TTI) is poised to expand its international research presence to the European Union state of the Czech Republic. Joe Button, senior research fellow with TTI, participated in the Central European (CE) T2 (technology transfer) meeting held last September. The objectives of the meetings were to offer participants the opportunity to learn about and expand technology transfer activities in the Central European T2 Group and discuss potential joint projects. This trip was sponsored by the Federal Highway Administration’s Office of International Programs.

“There was a tremendous amount of information shared between the partners,” says Daniel Berman, Federal Highway Administration division director. “Our meetings focused on the needs of the national transportation community such as safety, operations, design and construction.”

The group traveled to the Czech Republic for the CE T2 meeting; met with Czech Republic Ministry of Transport officials in Prague; toured research facilities in Brno and Tisnov; and toured several locations of roundabouts, bridges and tunnels. They also assessed different types of asphalt and concrete pavements.

“During our meetings, it became clear that safety was the most important issue for the Czech Republic. Therefore, that area of research might provide the greatest opportunity for TTI.”

Joe Button,
Senior Research Fellow
Division Head, TTI

The Czech Republic was established after the split of the former Czechoslovakia into two independent states on January 1, 1993, and is one of the most stable and prosperous of the post-Communist states of Central and Eastern Europe. The Czech Republic is bordered by the Slovak Republic to the east, by Poland in the north, by Germany in the west and by Austria in the southeast.

Transportation is one of the key sectors of the Czech Republic’s economy with significant potential for international relations. Demand for the transport of passengers and goods has been growing constantly. The objective of the Czech administration is to create legislative and economic conditions that will provide public transport services, encourage business activities in the transportation sector and establish a transport infrastructure to meet growing transport demands.

“The world is growing smaller, and as a world leader we recognize that sharing technology is a best practice and allows us to market beyond our borders,” says Berman. “We look forward to a long and lasting relationship with TTI in our efforts to advance global transportation.”

For more information, please contact Joe Button at (979) 845-9965 or j-button@tamu.edu.
When more than 175,000 Allied troops landed on the beaches of Normandy on June 6, 1944, few of them had visions of glory. Most were simply scared young men barely out of high school who were assigned a rather daunting mission: to free Europe from Nazi domination.
Under constant enemy fire, 200 men from James Earl Rudder’s 2nd Ranger Battalion scaled the 100-foot cliff at Pointe du Hoc (four miles west of Omaha Beach) early in the invasion. Their mission was to take out German gun emplacements raining artillery fire onto thousands of exposed Allied troops crawling across the beaches. “Rudder’s Rangers” destroyed those guns and defended their perilous position for two days. Estimates of casualties from the unit range between 50 and 60 percent.

That same cliff is under assault again, this time from Mother Nature herself. “Wave attacks,” as researchers call them, are slowly eroding the caverns beneath the cliff. Eventually the structural support will be gone altogether when the caverns become deep enough. Gravity will do the rest.

“When you’re at the bottom of that cliff and look up, it’s extremely impressive,” says TTI Research Engineer Jean-Louis Briaud, referring to what Rudder and his men saw some 60 years ago. “We’ve used the latest technology to help find a solution to the erosion problem, though our efforts pale in comparison to the sacrifice those men made.”

Briaud is one of three Texas A&M University researchers studying the structural failure beneath Pointe du Hoc. Last year, using EFA (erosion functional apparatus) technology developed by the Texas Transportation Institute (TTI) in conjunction with the Texas Department of Transportation, Briaud took samples from the site and ran water over them to simulate the erosion process. Strength tests were also run on the rocks.

Robert Warden of the A&M College of Architecture made detailed drawings of the bunkers and artifacts at the site and performed LIDAR (light detection and ranging) surveys. Mark Everett of the College of Geosciences ran non-intrusive geophysics tests, which included shooting a current through the soil to determine the geological composition of the cliff. An international group of consultants—Hayward-Baker (United States), Soletanch (France) and IGM (Lebanon)—supported the research in the interests of finding ways to preserve this historic site.

The team found that, since Rudder’s Rangers scaled the cliff in 1944, some 10 meters of horizontal depth have been lost to erosion by the sea. This causes a significant and ever-increasing amount of weight to press down on the emptying caverns, and every 4 meters of lost depth causes a collapse every 25 years or so.

Preservationists fear that without intervention, the site—along with the memorial that recognizes the bravery of Rudder’s Rangers in helping to liberate France—will eventually fall into the sea. “There is a part of the cliff which, according to our calculations, is getting close to another collapse,” says Briaud.

“It’s only a matter of time.”

To preserve the historic cliffs, the team proposes a two-phased solution. Phase I (estimated at $2.5 million) is to backfill the caverns with “shotcrete” (concrete shot into the caverns) as an immediate measure to stop the daily erosion across about 50 meters of the cliff.

Phase II (estimated at $17 million) is more ambitious. Engineers will consolidate 300 meters of the cliff and anchor the face of the cliff with rock and soil anchors covered by shotcrete. Preservationists are currently seeking public and private dollars to fund these efforts.

This project has been a very personal one for Briaud. Born in France and having pursued most of his professional life in America, preserving the site has meaning for him beyond the historical. “I love both countries,” he explains. “People dying to essentially come and save my parents makes this a very special project for me. I feel like it’s the least I can do to help save the memorial to their sacrifice.”

Rep. Chet Edwards of Texas’ 17th Congressional District played a key role in convincing Congress to include sufficient funds for the American Battle Monuments Commission to take up the effort.

“Pointe du Hoc is hallowed ground that should stand for generations to come as a sacred symbol to the world of the American GI’s unwavering courage in World War II,” said Edwards, chairman of the Military Construction and Veterans Affairs Appropriations Subcommittee. “This important project represents an international effort to save this historic site.”

For more information, please contact Jean-Louis Briaud at (979) 845-3795 or briaud@tamu.edu.
In the fall of 2004, Texas Transportation Institute (TTI) Associate Transportation Researcher Carlos M. Chang-Albitres led efforts to help improve the transportation infrastructure in the Republic of Paraguay. Along with Joe Button, TTI Senior Research Fellow, Chang-Albitres used fluency in Spanish and his transportation research background to help craft a five-year memorandum of agreement (MOA) between TTI and the Republic of Paraguay. Button signed the MOA with Public Works and Communications Minister Jose Alberto Alderete Rodríguez on behalf of then-TTI Director Herb Richardson.

This groundbreaking MOA ushered in a new era of research in South America for TTI. Bolstered by the support of the Inter-American Development Bank (IDB) and United States Trade and Development Agency (USTDA), the Institute has additional project initiatives in Argentina and Peru.

The Toll Viability Screening Tool (TVST) can be found at http://www.construccion.org.pe/tvst/.
PARAGUAY

One of the original objectives of the Paraguay agreement was to assist with the building of a major road in the El Chaco region. Fernando Orduz, an infrastructure specialist and civil engineer with IDB, led the bank’s effort to choose TTI and negotiate the MOA. IDB considered two key factors when selecting TTI—climate and expertise.

The similarity of challenges, besides the academic and technological excellence achieved by TTI, was a key factor when dealing with similar weather and geological conditions present in Texas as those existing in the El Chaco region of western Paraguay.

“When we first began the project, we observed the different problems they were facing during road construction due to climate and poor quality soils in the region,” says Button. “They needed construction specifications for that particular condition, so TTI immediately knew that we could help from the ground up. To help make this possible, IDB stepped forward to fund this five-year agreement with TTI.”

The Institute also entered into similar MOAs with Paraguay’s National University of Asuncion and the Catholic University of Asuncion. “Both universities have already conducted research in various engineering fields,” says Chang-Albitres. “These agreements will open new channels of cooperation.”

ARGENTINA

With a growing population and improved economy, Argentina is facing some unique challenges related to highway safety and road construction and design. The Asociación Argentina de Carreteras (Argentine Roads Association) and TTI will be working together to find transportation solutions in Latin America. The agreement was signed by the president of the association, Miguel Salvia, and, on behalf of TTI, Assistant Agency Director Dean Alberson.

“Argentina is interested in developing a crash testing research facility similar to what we have at TTI,” says Carlos M. Chang-Albitres.

The agreement was made at the conclusion of the Argentina Roads Safety and Traffic Congress in Buenos Aires this summer. In part, the MOA “recognizes that a collaborative effort will be of mutual benefit and will serve to establish enduring ties of cooperation.” The MOA will last for five years and is renewable.

“Argentina is serious about improving its roads and the safety of its traveling public,” says Alberson. “We are honored to work with them in this endeavor, sharing with transportation colleagues in Latin America what has worked here in the United States and applying that to the unique challenges in Argentina.”

PERU

TTI Associate Agency Director Bill Stockton and Carlos Chang-Albitres entered into an agreement with the Construction Management Institute of Peru in 2005. Workshops, publications and other means for transferring technology have been taking place since then. One of the most interesting projects is the ongoing development of an online version of the toll viability screening tool (TVST).

“Peru, like many other countries, is pursuing toll roads as a funding option,” says Stockton. “We are working with the Construction Management Institute of Peru to make the toll viability screening tool web based, and this can be used by public agencies.”

The toll viability screening tool was the result of a TxDOT funded project conducted by TTI in 2004. The purpose of the project was to provide states and other transportation entities an analytical tool that allows them to make realistic, “first-cut screening” estimates of potential revenue from toll funding.

The website was recently presented by Stockton and Chang-Albitres in a webinar sponsored by the Federal Highway Administration and the International Road Foundation that connected Argentina, Chile, Peru and the United States.

The TTI researchers involved in the activities in South America view their efforts as a way to diversify funding and research on an international scale. They also derive personal satisfaction from sharing their transportation expertise with other countries.

“The MOA with Paraguay was the first step in developing several specific research projects in cooperation with local partners to strengthen the road engineering practice in South America and to leave behind some legacy knowledge for future generations,” says Chang-Albitres. “TTI’s aim is to contribute to developing better infrastructure facilities for a better future.”
Pavement marking research on a national scale

(Above and below) The harsh environment of Alaska proved an ideal location for testing the durability of various types of pavement markings.

THE PROJECT TEAM
❖ Texas Transportation Institute
❖ Science Applications International Corporation
❖ Center for Transportation Research and Education at Iowa State
❖ Chalmers Engineering Services, Inc.
❖ Gamma Scientific
❖ Precision Scan
❖ Center for Transportation Research, University of Tennessee
❖ Pavement marking industry in general
For years, the Texas Transportation Institute (TTI) has conducted groundbreaking research in the area of pavement markings and retroreflectivity. Now TTI is taking its expertise nationwide in a pavement marking demonstration project in Alaska and Tennessee.

The project, sponsored by the United States Department of Transportation, is studying the safety impacts, environmental impacts and cost-effectiveness of different pavement marking systems. TTI Research Engineer and Division Head of the Operations and Design Division Paul Carlson heads the massive project that also receives assistance from several agencies.

“There are several issues that this project is attempting to tie together,” explains Carl Andersen, roadway team leader for the Federal Highway Administration. “One is studying the benefit of using wider-than-normal edgelines on two-lane rural roads, and another is the durability of pavement marking systems. We hope the research findings offer the potential for significant cost savings for states.”

In order to assess the cost-effectiveness of different pavement marking systems, the team installed longitudinal and transverse pavement marking test decks in Alaska and Tennessee. “Anchorage, Alaska, where we installed one of our test decks, probably has the toughest pavement marking conditions in the U.S.,” says Carlson. “The Alaska Department of Transportation and Public Facilities responsible for the Anchorage jurisdiction has a bare pavement policy in the winter, so they plow more than you would expect, especially during heavy snowfall like they had last winter. Alaska also allows studded tires, and they use very abrasive material and de-icing agents on the roadway. So in reality, it becomes one of the more harsh environments for pavement markings, which is ideal for a durability study.”

With the assistance of the Tennessee Department of Transportation, the research team is studying the benefits of wider-than-normal edgelines on curves on rural two-lane highways. Last summer a team of researchers collected data for two months on vehicles negotiating those curves with four-inch edgelines. Next summer the Tennessee Department of Transportation will re-stripe the same curves with 6-inch edgelines, and the research team will repeat the data collection process and compare the results.

“In this part of the study, we are looking at operational surrogates for safety such as braking, lane placement and deceleration, which are all characteristics of vehicles negotiating two-lane horizontal curves,” says Carlson. “We want to know if wider edgelines change the way drivers negotiate rural two-lane horizontal curves, which are over-represented in national crash statistics.”

A third part of the project involves a retrospective crash study to determine if wider lines are safer. The research team surveyed all the states to find out if they used wider edgelines. If they did, researchers wanted to know where and when they were applied. For those states that can provide these data, the team is getting the before-and-after crash data to conduct a national analysis to determine if there are safety benefits to wider edgelines.

While Andersen admits that the scope and geographic locations of the project present challenges, he is also quick to point out the rewards.

“We have had great cooperation from the states and industry partners that have helped move this project forward. We also have an outstanding research team. It has been challenging, but gratifying.”

“An edgeline is restriped on the Tennessee test deck.”

“Researchers collected data on how vehicles negotiated curves with varying widths of edgelines.”

“An edgeline is measured on a test deck in Tennessee.”

“Carl Andersen, Roadway Team Leader for the Federal Highway Administration”

“More Information
For more information, please contact Paul Carlson at (979) 847-9272 or paul-carlson@tamu.edu.”
Futuristic shuttle may transform freight transportation

It has the promise of revolutionizing the way freight is transported within ports, across borders and along highway corridors around the world. It could also drastically reduce emissions and delivery delays, while significantly increasing efficiency and security. In short, the Universal Freight Shuttle (UFS) could change the essence of the way humans do business.

“The Universal Freight Shuttle was conceived eight years ago when my team and I were investigating an underground transportation method,” says Assistant Agency Director Steve Roop, the head of the Texas Transportation Institute’s (TTI) Multimodal Freight Transportation Division and the UFS developer. “We soon realized the underground project was not feasible, but we used some of those same ideas to develop the shuttle’s concept.”

The futuristic-looking UFS consists of electrically powered vehicles propelled by linear induction motors that travel on a specialized, derailment-proof guideway similar to the “people movers” operating at some major airports and cities. However, these shuttles are large enough to move any standard freight container or trailer. Researchers say the major benefits include the low operational costs and the promise of congestion relief.

Use of the UFS at ports will include Homeland Security scanning stations, which will allow every container to be inspected (compared to the estimated five percent that are inspected today) without delays. Along highways, the UFS will operate on existing rights-of-way. It will be built on an elevated guideway, allowing for travel beneath it. Landowners would also be able to move cattle and farm equipment underneath the guideways.

“Many have commented that all of this sounds too good to be true,” Roop says. “But, there is huge interest in the Universal Freight Shuttle. The biggest next step right now is to get a prototype built so it can be tested and proven.”

Building a prototype is where the Port of Corpus Christi comes in. Negotiations are under way with the port to build a full-scale prototype on its property at Ingleside. “The Port Commission was very intrigued with the UFS,” says Corpus Christi Port Commissioner Judy Hawley. “We directed the staff to proceed with the negotiations with TTI because we could see the shuttle’s tremendous potential for moving freight efficiently, securely and on time between the LaQuinta container terminal and commercial centers in Mexico, via the inland Port of Laredo.”

In addition to the negotiations with the Port of Corpus Christi, the UFS has received a high-profile endorsement with the same company that has been named master developer for the Trans-Texas Corridor 35. Zachry American Infrastructure intends to use the UFS for the project’s freight transportation component.

“When I first saw the design of the shuttle, it became very clear that it met every criterion we laid out in advance for a successful freight transport system,” says Gary Kuhn, senior project manager for Zachry American Infrastructure. “From the projected long-term costs and maintenance requirements to the environmental benefits, the Universal Freight Shuttle was the hands-down choice.”

“I think the Universal Freight Shuttle meets all of TxDOT’s goals,” Roop says. “That’s why there is so much enthusiasm to move forward. If all goes as planned, I think the term ‘Universal Freight Shuttle’ will become synonymous with freight transport, only it will take less time and money to operate, and be safer for people and the environment—not to mention its positive impact on congestion.”

For more information, please contact Steve Roop at (979) 845-8536 or s-roop@tamu.edu.
Texas Transportation Hall of Honor Welcomes Class of 2007

The stately board room in the Texas Department of Transportation’s historic Dewitt Greer Building in Austin was an apt setting for the induction ceremony of three transportation visionaries into the Texas Transportation Hall of Honor September 25. The class of 2007 includes J.C. Dingwall, Ernest E. Howard and Marcus L. Yancy Jr.

Director Dennis Christiansen presided over the event, which included reflections from family members and transportation colleagues.

Among the notable career achievements of Ernest Howard was being called upon by the Governor in 1914 to design the Congress Avenue Bridge in Austin. In his remarks, Howard Needles Tammen & Bergendoff (HNTB) Vice President Richard Ridings noted Howard’s extraordinary vision in “designing a bridge that was originally intended for carriages and Model T’s, but was so well built the original foundation was used when the bridge was refurbished in the 1980s.”

Former TxDOT State Highway Engineer J.C. Dingwall directed construction of the Gulf Freeway, the first urban expressway built in Texas. Under Dingwall, the department employed 20,500 people as it pushed to complete the Interstate Highway System. Don Dingwall, son of J.C. Dingwall, accepted the award on behalf of the Dingwall family. “I am grateful and humbled to know that my father’s contributions are being recognized, as the Texas Highway Department was his passion,” said Dingwall.

Marcus Yancy Jr. joined the Texas Highway Department in 1957, where he worked until his retirement in 1993. He was twice appointed chairman of the State Agency Coordinating Council, and he was twice elected to the board of the State Employees Retirement System. In his acceptance speech, Yancy said, “The joy of my career was my participation in the creation of our roadway system and the close network of friends that continues today.”

Other speakers included TxDOT Deputy Executive Director Steve Simmons, Executive Vice President of the Associated General Contractors of America (AGC) Tom Johnson, Chairman of the Board of Williams Brothers Construction James Pitcock and Former Administrator of the Federal Highway Administration Ray Barnhart.

After the ceremony, AGC hosted a luncheon with speakers that included former Chair of the Texas Transportation Commission David Laney and former Executive Director of TxDOT Arnold Oliver.

The Texas Transportation Hall of Honor, established in 2000 by TTI, was set up to recognize in a formal and permanent manner those visionary leaders who have helped to provide Texas with an outstanding transportation system.

The Hall of Honor is located in the main conference room in TTI’s Gibb Gilchrist Building at the Texas A&M Research Park in College Station. Each individual inductee is recognized by a plaque on permanent display.
New TxDOT Leader, Meeting Place for Short Course

The 81st Annual Transportation Short Course provided the transportation community with a chance to hear from recently appointed Texas Department of Transportation (TxDOT) Executive Director Amadeo Saenz in his new role. The first Hispanic leader of TxDOT rose through the ranks in the Pharr District, beginning in 1978 as an engineering laboratory assistant, to become the 19th director in the department’s 90-year history.

Saenz takes the TxDOT helm at a challenging time. Throughout the opening session of Short Course, speakers emphasized the need for change as they looked to the future of Texas transportation. Reduced funding due to tighter federal budgets and the diversion of state tax dollars to non-TxDOT programs will challenge transportation professionals charged with enhancing and maintaining the Texas transportation system in the future.

Commissioners Fred Underwood, Ted Houghton Jr. and Hope Andrade emphasized that Texas would have to do more with less to meet the needs of its citizens as the population grows while funding resources shrink. Commission Chair Ric Williamson acknowledged that these were the “challenges of America” as the entire nation struggles with fulfilling the needs of more citizens with less money.

Saenz reiterated his colleagues’ commitment to TxDOT’s strategic plan, which strives to reduce congestion, enhance safety, expand economic opportunity, improve air quality and increase the value of transportation assets. Saenz recognized the tough road ahead but assured everyone in the room that they were up to the challenge.

This year’s Short Course had a record attendance of 2,799 people. “Despite the logistical problems of changing locations from Rudder to Reed Arena, all of the comments from TxDOT have been positive,” says TTI Director Dennis Christiansen. “The credit goes to the employees who made this a priority.”

The Gallaway Golf Tournament, which took place the day before Short Course, was also considered a success. There were 152 golfers, which set a new record for participation.
Reilly Named 2007 Research Champion

The 2007 TTI/Trinity Research Champion Award was presented to Robert J. Reilly at a luncheon in the Texas A&M University System Board of Regents Quarters in College Station on October 3.

“Bob Reilly is much deserving of this award,” says Director Dennis Christiansen. “Bob served as director of the Cooperative Research Program at the Transportation Research Board for 22 years. Under his leadership, the program has grown dramatically. Bob established the hallmarks of the program, which include high-quality research, tangible and valuable results, usable products, integrity and impartiality, and close coordination with sponsoring agencies and organizations.”

“It is an honor to receive this award from TTI,” Reilly said during the presentation. “TTI is one of the premier university-affiliated research groups in the country, and it is a privilege to be recognized as a research champion.” While in College Station to receive the award, Reilly presented a seminar on the Cooperative Research Program to TTI staff and students.

“The Research Champion Award recognizes individuals who provide significant contributions to advancing transportation research, technology transfer, implementation and professional development,” notes Associate Director Katie Turnbull. “The award is presented on an annual basis to an individual selected by a committee that includes members of the TTI Advisory Council and the leadership team from nominations submitted by staff and Advisory Council members.”

TTI Joins Consortium to Improve U.S. Infrastructure

Texas Transportation Institute (TTI) asphalt researchers are working on a multi-million dollar contract to improve the nation’s infrastructure as part of the Asphalt Research Consortium (ARC), which officially started this summer under the direction of the Federal Highway Administration.

ARC received funding of $27 million for five years through SAFETEA-LU. The consortium is headed by the Western Research Institute, with TTI, the University of Wisconsin-Madison, The University of Nevada at Reno and Advanced Asphalt Technology as partners.

“Although the project is getting under way now, we’ve been working for the last five years to get involved in this type of group effort,” said Senior Research Fellow Dallas Little, who is leading TTI’s efforts along with Research Engineers Robert Lytton and Eyad Masad. “This research is imperative in order to improve our nation’s pavement infrastructure, which is predominately asphalt. I am very pleased that the work is beginning.”

TTI will focus on preventing two of the primary causes of pavement problems—moisture damage and fatigue cracking. “We have to find ways to make pavement last longer. It is a resource that should be cherished and preserved,” Little said.

“Our consortium includes some of the best asphalt chemists, rheologists and performance modelers anywhere to address these problems.”

Chang-Albitres Elected to IRF Board of Directors

Texas Transportation Institute (TTI) Associate Transportation Researcher Carlos Chang-Albitres was recently elected to the International Road Federation (IRF) board of directors for a three-year term.

Founded in 1948, the IRF is a non-governmental, not-for-profit organization with members from both the public and private sectors in 90 countries worldwide. IRF promotes the development and maintenance of better, safer roads and road networks throughout the world, using technological solutions and management practices that provide maximum economic and social returns from road investment.

“In his leadership role, Carlos will help shape our strategic vision of building safer roads around the world,” says Patrick Sankey, chief executive officer of IRF. “He is a key component to reaching the people of the Latin and Caribbean region through his vast network of contacts and provides us with continued relations at the highest levels of government.”

The IRF will also award a fellowship to a Texas A&M engineering student in the upcoming year.

“Since 1949, we have put 1,166 students from 114 countries through our fellowship program,” says Sankey. “The program has been a remarkable success, and it’s a way for young people to return to their native countries and apply their transportation knowledge.”

“The need for transportation improvements is not only great in the United States, but in every country I’ve visited,” says Chang-Albitres. “Being elected to the IRF board of directors is a big honor and can open many doors for the TTI. The IRF will increase our international visibility and expand contacts for potential sponsors.”

2007 Research Champion Award recipient Robert Reilly (center) is joined by TTI Associate Agency Director Katie Turnbull and Director Dennis Christiansen.
Annual TTI Council Meeting
One to Remember

A crisp day in mid-September and the rolling hills of the massive Circle T Ranch set the stage for this year’s annual TTI Council meeting. The Council, comprised of 31 influential transportation leaders in Texas, met at the Perot family ranch located on a 17,000-acre, master-planned development called AllianceTexas.

Chaired by David Cain of DC Consulting, the meeting began with a welcome and introduction by Tim Ward, Council member and president of Alliance Air/Aviation Services. Ward introduced Ross Perot Jr., chairman of Hillwood Development Corporation, the firm responsible for AllianceTexas. The development features the world’s first 100 percent industrial airport, BNSF Railway’s Intermodal Facility (the 4th largest intermodal yard), the Texas Motor Speedway and the massive American Airlines Maintenance Base, which can accommodate up to six 777-aircraft wingtip-to-wingtip.

TTI Council members were taken in groups of five on a brief helicopter flight to explore AllianceTexas and to see the interlink between air, rail and roadway transportation elements within the massive development. Members also took an afternoon tour of the American Airlines Maintenance Base.

TTI Director Dennis Christiansen introduced Council members and gave an overview of the Institute’s progress and future goals during his tenure in leadership. New funding initiatives, new leadership at the Texas A&M president and A&M System chancellor positions, and the new TTI state headquarters building were among the topics highlighted in his presentation.

Associate Agency Director Ed Seymour gave an overview of TTI international research endeavors, and Assistant Director Steve Roop discussed developments between TTI and Zachry American Infrastructure on the freight shuttle concept. The afternoon concluded with a roundtable discussion and brief talks about transportation issues in Texas and ways TTI can serve as a catalyst for economic growth.

(Top L) Ross Perot Jr., Chairman of Hillwood Development Corporation, speaks about his firm’s 17,000-acre AllianceTexas development.

(Bottom L) Veronica Callaghan, Mayor’s Transportation Cabinet, Paso Del Norte Group (El Paso); (C): Katie Turnbull; (R) Cathy Reiley, Assistant Vice Chancellor for Engineering, External Affairs, The Texas A&M university System

(Gary Kuhn, Senior Project Manager, Zachary American Infrastructure, and Steve Roop, Assistant Director, TTI discuss the TTI Freight Shuttle Concept.)

Studying a schematic of the AllianceTexas development are (L to R) TTI Council Members Joe Keese, Chief Executive Officer, TransPecos Bank; Amadeo Saenz, TxDOT Executive Director; Katie Turnbull; Rick Collins, TxDOT Research & Technology Director

(Bottom R) Roundtable discussion left-to-right: TTI Assistant Director Gene Buth; TTI Council member Mark Stiles, senior vice president, Trinity Industries, Inc., TTI Council Member Rollin Bredenberg, vice president Service Design and Performance, Burlington Northern Santa Fe Railroad.
**TDS Leads News Conference on Nighttime Driving Dangers**

Most teenage driving fatalities happen at night, and, based on a survey by TTI researchers, teens are in the dark about the dangers associated with nighttime driving. That was the message of an Austin news conference conducted by the Teens in the Driver Seat (TDS) Program October 30, just days before the end of daylight saving time.

“The teen driver safety problem has reached epidemic proportions—here in Texas and around the world,” TTI Director Dennis Christiansen told members of the news media gathered in the Texas Capitol. “It’s an urgent public health crisis, and TTI has been working for years to better understand it. Now, we not only know more about what causes the problem, we also know more about how to address it.”

TTI researchers surveyed more than 4,400 teens at 17 Texas high schools to determine how much they know about driving risks and how often they engage in dangerous driving behaviors. The findings highlight the reasons why driving is the No. 1 cause of death for teenagers in the United States:

- Less than 1 percent of Texas teens understand that driving at night is unsafe, while almost half say they routinely drive after 10 p.m.
- Only a third of teens recognize that it’s dangerous to talk or text on a cell phone while they drive, and roughly half admit doing so frequently.
- 72 percent of teens think drug and alcohol use is the No. 1 risk factor, even though it ranks fifth on the list of crash causes.

The survey also determined that teen drivers in rural areas are twice as likely to talk or text message and three times more likely to have received a speeding ticket. The study revealed that rural teens are more likely to drive at night than teens in urban areas.

After the news conference, officials with State Farm Insurance presented TDS with a check for $500,000 representing the company’s commitment to funding the program for the next five years. State Farm Insurance representative Ronnie Vandiver spoke at the news conference, as did other proponents of TDS, including Texas Transportation Commissioner Hope Andrade and Texas Senator Kirk Watson.

**TRB Best Paper Award for TTI**

The Transportation Research Board (TRB) has notified the co-authors of a Texas Transportation Institute (TTI) research paper they are the recipients of the D. Grant Mickle Award, which is given each year for the best paper in the area of operations and maintenance. The paper is titled “License Plate and Telephone Numbers in Changeable Message Sign Amber Alert Messages.”

Conrad Dudek, Steve Schrock and Brooke Ullman will be honored during the TRB 87th Annual Meeting in Washington, D.C., January 14. In response to the news of the award, Director Dennis Christiansen says, “This reflects so well on the quality of our work and our researchers. Thank you for making all of us look good.”
TECHNICAL REPORTS


“Recommended Rehabilitation Options for Concrete Pavements,” by Thomas Scullion, 5-1731-01-P1, November 1, 2007.


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