

2009 ANNUAL REPORT



TEXAS A&M UNIVERSITY

UNIVERSITY OF TEXAS AT AUSTIN

TEXAS SOUTHERN UNIVERSITY



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Southwest Region University Transportation Center Annual Report 2009

*Transportation Solutions to Enhance Prosperity
and the Quality of Life*

Region Six UTC

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From from the Director



Dock Burke
Director, SWUTC

The next few years will be a defining period for the country's response to unique opportunities to re-equip the transportation infrastructure and re-establish transportation as an engine of economic progress for the 21st century. In the context of the re-discovery of the macroeconomic role of governmental policy, transportation can lead the public sector's contribution in returning the economy toward a sustainable full employment condition.

A few of the needed initiatives fall within the theme and thrust areas of the SWUTC's activities. Inside this *Annual Report* there are highlight pieces about some cutting edge topics being pursued in our research, education, and technology transfer programs. The topics range from high-speed rail investment in Texas to new freight patterns that will result from expanded capacity in the Panama Canal.

The strategic imperatives of climate change impacts must become understood and then integrated into transportation policy and investments. New technologies in construction materials are needed to extend the service lives of newly built infrastructure. Expanded methodologies to utilize concepts such as mega-regions must be developed to support future transportation planning and policy. Some metrics defining "green transportation" must be developed and operationalized. And last in this list, but maybe first in difficulty, the economic resources and incentives needed for transformative transportation initiatives must be identified and harnessed into viable, sustainable constituencies.

All of this, and more, will require "the best of our best" people and ideas. The academic programs within our consortium are also spotlighted herein to reflect SWUTC capacities to find and educate the best students available for conceptualizing, building, and operating the future transportation enterprises of this century. In the three universities, our students must be challenged to transcend traditional academic disciplines and create new linkages in tying transportation concepts into the socio-political framework of the culture.

As we go forward, SWUTC's programs will demand continued leadership from prominent faculty members and researchers. All of these scholars are identified in the text of the *Annual Report*.

But, I would like to congratulate some particular individuals upon their more recent successes. **Dr. Lei Yu** has been appointed as *Dean of the College of Science and Technology* at TSU and has decided to remain active in the SWUTC as a professor and researcher. From UT-Austin, **Dr. Michael Walton** served as chairman of the Texas Department of Transportation's *2030 Committee* comprised of experts in business and transportation to produce a comprehensive update of Texas transportation needs to the year 2030. TTT's **Dr. Tim Lomax** was named a *Regents Fellow* by the TAMUS Board of Regents, and he was also selected by the ITE as the 2009 recipient of the *Theodore M. Matson Award*. **Dr. Dallas Little**, currently holder of the *E. B. Snead Chair in Transportation Engineering* in the Zachry Department of Civil Engineering of the Look College of Engineering at Texas A&M University, agreed to serve on the SWUTC's Executive Committee. And UT-Austin's **Dr. Travis Waller** received the *Fred Burggraf Award* for excellence in transportation research at the Transportation Research Board's January 2009 meeting.

We are prepared and eager to continue the challenges engaged in our SWUTC enterprise.

A handwritten signature in dark ink, appearing to read "Dock Burke".

Dock Burke
October 31, 2009

Theme and Vision

The SWUTC theme

Transportation Solutions to Enhance Prosperity and the Quality of Life

challenges SWUTC participants to expand their capacities to the fullest to produce education, research, and service solutions to transportation issues facing the people of the Southwest and the U.S. Our theme encompasses four strategic thrusts - support of economic growth and trade; enhancement of mobility, accessibility and efficiency; promotion of safety and safe environments; and development of the transportation workforce.

To achieve maximum value from the SWUTC in implementing our grant, the SWUTC continues to pursue its vision to become

an internationally recognized center for excellence providing knowledge, diverse leaders, and innovative solutions for the transportation challenges of the 21st Century.

This ambitious vision calls upon us, over the expected lifetime of this UTC grant, to deliver premier research programs in transportation systems, transportation education and workforce development, and transportation technology transfer and service. We will pursue this vision by building on the significant resource base already in place within the transportation programs of the consortium universities, adding new partnerships and alliances with other universities and transportation entities in the region, and keeping the three program elements (research, education, and technology transfer) focused upon our theme.

The SWUTC Consortium

Since the establishment of the UTC program, the SWUTC consortium has included these members: Texas A&M University System, Texas Southern University, and the University of Texas at Austin.

Lead University - Texas A&M University System



The *Texas Transportation Institute* is headquarters for the SWUTC and is a premier transportation research center in the U.S. The research program at TTI is extensive and includes transportation systems and operations, policy and planning, economics and environment, materials, structures, safety, and human factors.

Texas A&M University's transportation-related faculty -- composed of experts in transportation engineering, materials, and planning -- prescribes the curriculum and requirements for undergraduate and graduate degrees with specializations in numerous aspects of transportation. Completion of these degrees creates engineers and scientists for professional careers and leadership positions throughout the transportation industry.

Texas Southern University

Located in Houston, Texas Southern University and its *Center for Transportation Training and Research* present a varied transportation program in planning, research, and implementation that has focused upon some unique opportunities in providing transportation excellence to African-American populations of students and transportation users. A blend of TSU's airway science expertise and its strength in urban transportation planning and operations creates new avenues for bringing multi-modal solutions into the classroom, laboratory, and implementation phases of existing and new transportation challenges for the 21st Century.



University of Texas at Austin

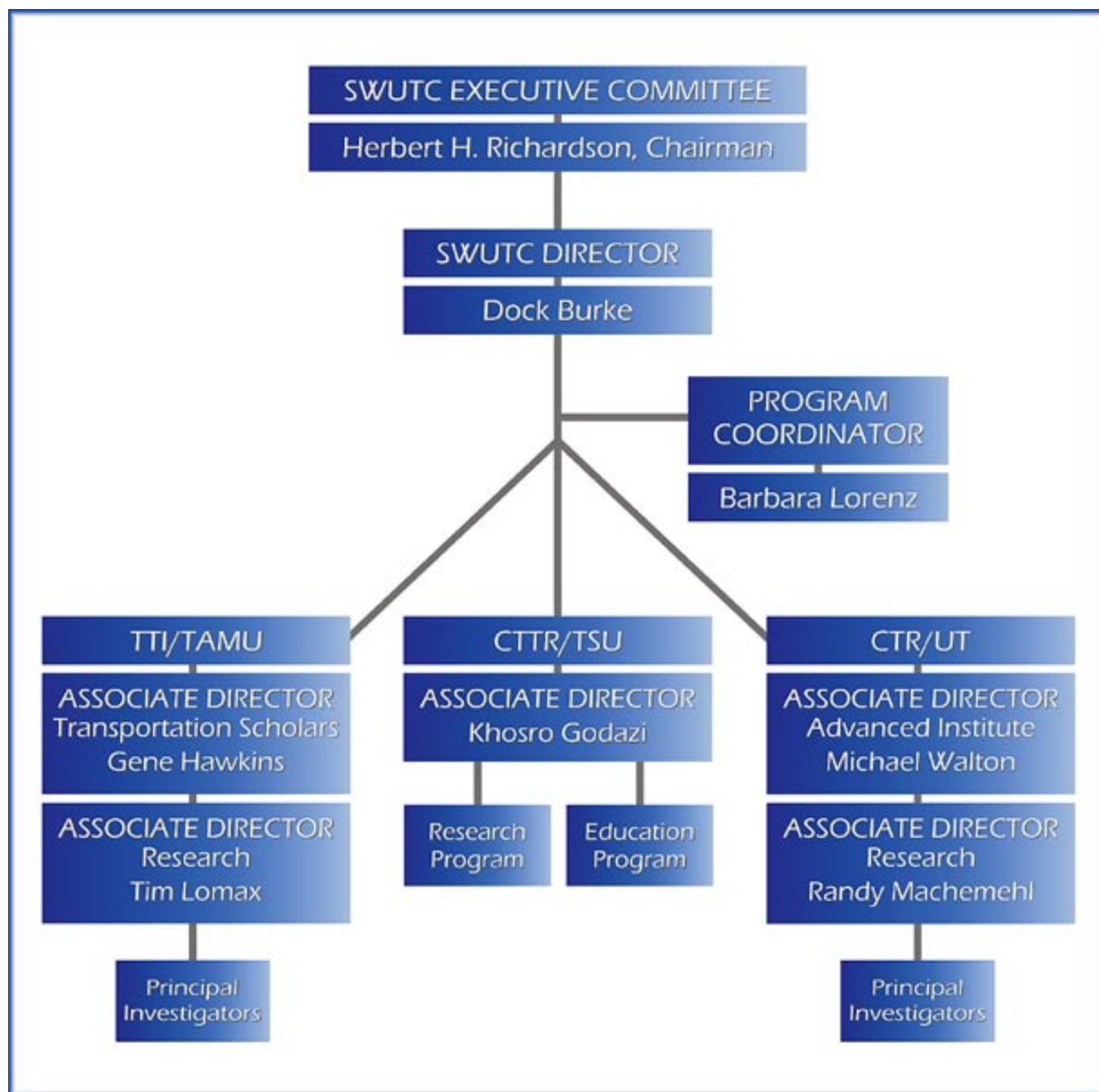


The transportation programs at the University of Texas at Austin and its *Center for Transportation Research* feature well-equipped facilities, top-notch research and teaching faculties, and high-quality students. A wide range of expertise in science, engineering, and policy gives the SWUTC a rich skill mix needed for developing viable solutions to complex issues involving transportation systems behavior, international goods movements, and harmonized modal transportation networks for improved performance, including a higher quality of life for the affected citizens.

Management Structure

The SWUTC Executive Committee oversees the SWUTC activities by establishing budget priorities; determining program content by selecting research projects; choosing the educational programs to be undertaken; and reviewing the administrative affairs of the Center.

The SWUTC Director plans, executes, and reports the approved activities of the Center. The Director is assisted by a Program Coordinator and five Associate Directors - two at TAMU/TTI, two at UT-Austin/CTR, and one at TSU/CTTR. These Associate Directors are each responsible for administering that portion of SWUTC's activities in their charge.



Key Center Personnel

SWUTC Executive Committee

Dr. Herbert H. Richardson, chairman



Dr. Richardson is Chancellor Emeritus of the Texas A&M University System, Director Emeritus of the Texas Transportation Institute, and Distinguished Professor of Engineering Emeritus, Texas A&M University.

A graduate of the Massachusetts Institute of Technology, Richardson served that institution as Professor, Head of the Department of Mechanical Engineering and Associate Dean of Engineering before joining Texas A&M in 1984 as Dean and Vice Chancellor of Engineering. He served as Chancellor of the Texas A&M University System prior to becoming Director of the Texas Transportation Institute in 1993 serving until 2006.

Dr. Richardson's areas of expertise include transportation systems and technology, system dynamics and control, fluid mechanics, design and fluid power control. He is a member of the National Academy of Engineering. He served for six years on the Council of the National Academy and the Governing Board of the National Research Council, and is a past Chairman of the Transportation Research Board. He has chaired and participated in numerous national committees of the National Research Council in areas such as Designing Safer Highways, Intelligent Vehicle-Highway Systems, Tank Car Safety, Future Strategic Highway Research and US Aeronautics Vision 2050.

Dr. Richardson's more significant honors include Honorary Member and Fellow, American Society of Mechanical Engineers; Fellow, American Association for the Advancement of Science; the Lamme Medal of the American Association for Engineering education, and recipient of the Rufus Oldenberger Medal (in dynamics and control) and the Pi Tau Sigma Gold Medal. He recently received the Roy B. Crumm Distinguished Service award of the Transportation Research Board, and the Council of University Transportation Centers award for Distinguished Contribution to University Transportation Education and Research.

Dr. Dennis Christiansen, member



Dr. Christiansen is Director of the Texas Transportation Institute. He has been a member of the staff of the Texas Transportation Institute for over 30 years. Projects directed by Dr. Christiansen have addressed areas such as: the role of rail transit in Texas cities; roadway operations and design; transportation and energy relationships; the design and operation of bus transfer centers and park-and-ride lots; the role of intercity rail passenger service in Texas; the potential role for a system of strategic arterial streets; and urban goods movement. Dr. Christiansen has become recognized as an international expert in the planning, design, operation and evaluation of preferential facilities for high-occupancy vehicles.

In 1979 he received the Transportation Research Board's Fred Burgraff Award. The International Institute of Transportation Engineers awarded him their Technical Paper Award in 1984 and the Technical Council Award in 1988. The Texas Section of the Institute of Transportation Engineers named him its Transportation Engineer of the Year in 1989. He is a past president of the International Institute of Transportation Engineers and is currently one of the 15-member Board of Direction for IITE. Dr. Christiansen is past president of the Research and Education Division of the American Road and Transportation Builders Association and currently serves on ARTBA's Board of Directors. He also served as President of the Council of University Transportation Centers (CUTC) in 2002. In 2003 he received the S.S. Steinburg Award presented by the American Road and Transportation Builders Association. In 2003, Dr. Christiansen was awarded the Regents Fellow Service Award presented by the Board of Regents of the Texas A&M University System.

Mr. Rick Collins, member



Mr. Collins is currently Director of the Research and Technology Implementation Office of the Texas Department of Transportation (TxDOT). In this capacity, he oversees and directs the development and operation of the Department's research, technology implementation, and new product evaluation programs.

Mr. Collins began his career with the Department in 1982, where he worked in the Design Division. He performed design work for a private engineering firm in Austin from 1985 to 1987. In 1987, he returned to the Department where he became the safety and programs engineer in the Traffic Operations Division. He served as the Railroad Liaison Engineer from 1995 to 1997 and as the Director of the Traffic Engineering Section from 1997 to 2004.

Mr. Collins represents TxDOT as the Vice-Chair of the American Association of State Highway and Transportation Officials (AASHTO) Research Advisory Committee and the state representative to the Transportation Research Board. He is also a member of the AASHTO Standing Committee on Research and serves on numerous National Cooperative Highway Research Program project panels.

Mr. Collins earned his Bachelor of Science in Civil Engineering degree from Texas A&M University in 1981 and his Master of Science in Engineering degree from the University of Texas at Austin in 1988.

Mr. Robert Harrison, member



Mr. Harrison is a Senior Research Scientist and the Deputy Director of the Center for Transportation Research at the University of Texas at Austin. He has worked in the area of transportation economics and planning for over 35 years and has published extensively in the area of economic impact studies, trucking issues, cost benefit analysis and transport system planning. Recently, his SWUTC work has focused on import-export supply chain performance, rail modeling, tracking the expansion of the Panama Canal and designing freight systems for Mega-regions. In addition, he has evaluated the wide number of international trade corridors serving Texas and is now updating vehicle operating cost predictions for highway investment and DOT revenue use. Mr. Harrison has written over 45 research reports and published over 30 peer reviewed

technical papers, made presentations to senior U.S. Department of Transportation (USDOT) staff, and has given testimony at a number of Texas Senate hearings. Prior to joining the Center for Transportation Research in 1987, Mr. Harrison worked first as an academic in the United Kingdom, then as an economist for the United Nations, and finally as a consultant to the World Bank.

Mr. Harrison is a past president of the Transportation Research Forum (TRF) and now serves as an associate editor of the TRF Journal. He is active within the Transportation Board (TRB). He is past chair of the Intermodal Freight Terminal Design and Operations committee, and a current member of the committees on Motor Vehicle Size and Weight, International Trade and Transportation and Agricultural Transportation.

Dr. H. Gene Hawkins, member



Dr. Hawkins is an Associate Professor in the Department of Zachry Civil Engineering at Texas A&M University, where he also serves as Division Head of the Transportation and Materials Division. He also holds a joint appointment as a Research Engineer with the Texas Transportation Institute (TTI). He joined the faculty at A&M in September 2004. Prior to that, he spent 18 years at TTI, where he supervised and conducted transportation engineering research. He received his Ph.D. in Civil Engineering from Texas A&M University in May 1993. He also holds Master of Engineering and Bachelor of Science (Cum Laude) degrees in Civil Engineering from Texas A&M University. Dr. Hawkins is a Registered Professional Engineer in Texas. Before joining A&M and TTI, Dr. Hawkins worked in the private sector for consulting firms in Bryan and Houston, providing services in the areas of general civil and transportation engineering.

Dr. Hawkins' primary field of interest is transportation infrastructure, with a special emphasis on traffic control devices, retroreflectivity, and visibility. He has been the PI or Co-PI on over 20 research projects with a total budget of \$6 million. He has authored over 20 refereed journal papers on his research and has authored or co-authored over 70 research reports. Dr. Hawkins is a member of numerous professional and technical organizations. He is heavily involved in the efforts of the National Committee on Uniform Traffic Control Devices which provides recommendations on changes to the MUTCD. He is a member of the full National Committee, a member of the Executive Committee, chair of the Markings Technical Committee, and chair of the Institute of Transportation Engineers (ITE) delegation. In addition to his NCUTCD activities, he is a member of the Transportation Research Board (TRB), the Institute of Transportation Engineers (ITE), and American Society of Civil Engineers. Within TRB, he is the former chair of the Traffic Control Devices Committee and a member of the Signing and Marking Materials Committee and the Tort Liability and Risk Management Committee. He has served on several industry panels associated with infrastructure and traffic control devices.

Dr. Carol Lewis, member



Dr. Lewis is an Associate Professor in Transportation Studies and Director of the Center for Transportation Training and Research at Texas Southern University. She is responsible for educating students in fundamentals of transportation and urban transportation issues, as well as conducting operational and policy related transportation research. Lewis serves as TSU's Principal Investigator for the Department of Homeland Security's (DHS) National Transportation Security Center of Excellence for Petrochemical Transportation Security. She also serves on the DHS Center for Excellence for Natural Disasters, Coastal Infrastructure, and Emergency Management with a focus on hurricane evacuation. Since 1992, she has conducted research for the Texas Department of Transportation (TxDOT) recently completing a study of regionalizing public transportation. Lewis' work for TxDOT also includes research about smart

growth, land use and development, strategic planning, and land value effects of elevated and depressed freeways. Dr. Lewis was the research supervisor for FHWA's Noise Compatible Land Use Brochure and workshop series on this topic. Her funded research also includes corridor feasibility studies for major Houston area freeway corridors, analysis of options to better manage freeway lanes and an assessment of the external influences on transit-oriented development.

Prior to joining Texas Southern University, Dr. Lewis spent 15 years as manager and director of planning at the Metropolitan Transit Authority of Harris County. She belongs to a number of professional organizations including the Transportation Technical Committee of the local Metropolitan Planning Organization and the Red Cross Transportation Advisory Committee. In 2004, Houston's Mayor Bill White appointed her to the Office of Mobility, an advisory function of the Mayor's Office and as Chair of the City's Planning Commission. At the suggestion of Mayor White, she was appointed to the Governor's Task Force on Emergency Evacuation following the 2005 hurricane season. Dr. Lewis served two years on the board of the Metropolitan Transit Authority as an appointee of, then, Houston Mayor Lee Brown and six years as the national academic advisor for the Conference of Minority Transportation Officials. Dr. Lewis holds a Ph.D. from the University of Houston in Political Science and M.A. and B.A. from the University of Iowa.

Dr. Talia McCray, member



Dr. McCray is an assistant professor at the University of Texas in Austin. She specializes in transportation planning and accessibility challenges for low-income populations, which are often dependent on public transportation. Her research explores innovative data collection methodologies capturing the "why" of travel demand and unsatisfied demand. Her work has taken her to South Africa to model the socio-economic and environmental factors that affect prenatal care for women living in rural South Africa. In Quebec City, Canada, she utilized GIS to organize and analyze data taken from focus groups and the self-mapping of individual space of low-income women, to better understand the challenges of using public transportation to access activities. Her recent work includes studies that have both a research and outreach focus in analyzing the activity patterns of low-income youth in Providence, RI, and Austin, TX. The Rhode Island study

sought to capture how youth experience their lives with respect to violence, and considered implications for their use of the city around them through tracking their activities. Current projects include design

ing transit mobility training programs for Austin youth and collecting GIS data on their perceptions and use of the communities in which they live. In addition, Dr. McCray has begun to explore the healthcare utilization patterns of low-income youth in Travis County.

Dr. McCray earned her Ph.D. from the University of Michigan, Ann Arbor, MI, in urban technological and environmental planning, specializing in transportation planning. Her MS is from Northwestern University, Evanston, IL, in electrical engineering. She graduated with high honors from Bennett College (BS mathematics) and North Carolina A&T State University (BS electrical engineering), both in Greensboro, NC. Dr. McCray teaches in the areas of transportation social equity, accessibility, healthcare planning, and general planning courses.

Dr. Melissa Tooley, member



Dr. Tooley joined TTI in May, 2006 and is the Director of the University Transportation Center for Mobility (UTCM) at TTI. She is the former Director of the Mack-Blackwell National Rural Transportation Center (MBTC) at the University of Arkansas, and she served as an Assistant Professor of Civil Engineering at the University of Arkansas and the University of Florida. She has a decade of civil engineering consulting experience on projects involving roadway design, flood control, construction management, forensic engineering and civil infrastructure improvements.

Dr. Tooley is a past President of the Council of University Transportation Centers (CUTC) and ARTBA's Research and Education Division, where she currently serves on its Board of Directors. She is a member of the Board of Regents of the Eno Transportation Foundation and is a former Eno Transportation Fellowship Recipient. A native of Little Rock, Arkansas, she was selected "Young Engineer of the Year" in 1995 by the Arkansas Society of Professional Engineers (ASPE). She serves on the Transportation Research Board Committee for Education and Training. Dr. Tooley was a Master's and Ph.D. level recipient of the Eisenhower Fellowship, sponsored by the Federal Highway Administration. As a graduate student, she was selected as MBTC's Student of the Year in 1994.

Dr. C. Michael Walton, member



Dr. C. Michael Walton is Professor of Civil Engineering and holds the Ernest H. Cockrell Centennial Chair in Engineering at The University of Texas at Austin (UT). In addition, he holds a joint academic appointment in the Lyndon B. Johnson School of Public Affairs. For more than 35 years he has pursued a career in transport policy and engineering analysis.

Dr. Walton is a member of the National Academy of Engineering. He is a past chair and member of the Transportation Research Board (TRB) Executive Committee. As the National Research Council chair of the TRB Division he serves as an ex-officio member of the Governing Board of the NRC. He was elected chairman of the Texas Department of Transportation's "2030 Committee." The committee, comprised of experts in business and transportation, is overseeing a comprehensive update of Texas transportation needs through the year 2030. In other professional society affairs he is a past chairman of the board of the American Road and Transportation Builders Association (ARTBA) and a past member of the Board of Governors of the

Transportation and Development Institute of the American Society of Civil Engineers (ASCE). In addition, he is a founding member of the Intelligent Transportation Society (ITS) of America and a past chair of the Board of Directors. He has served on or chaired a number of national study panels including those mandated by Congress and others of the NRC. Other professional or technical society memberships include American Society for Engineering Education, Institute for Operations Research and the Management Sciences, Institute of Transportation Engineers, International Road Federation, National Society of Professional Engineers, Society of American Military Engineers, and the Urban Land Institute.

Dr. Walton has received numerous honors and awards for his scholarly pursuits. He is a Distinguished Member of the American Society of Civil Engineers and was selected as a member of the inaugural class of ITS America's ITS Hall of Fame. In 2006 he received an Honorary Doctorate Degree from the Nagoya Institute of Technology. Dr. Walton received the Council of University Transportation Centers (CUTC) award for distinguished contribution to university transportation education and research. He received an Outstanding Projects and Leaders (OPAL) award from the American Society of Civil Engineers to recognize and honor lifetime excellence in furthering civil engineering education. In addition, Dr. Walton was named to America's Top 100 Private Sector Transportation Design and Construction Professionals of the 20th Century by the American Road and Transportation Builders Association. This honor recognizes "outstanding individual achievement, innovation and leadership in transportation design and construction." He received the 2000 George S. Bartlett Award in recognition for outstanding contributions to highway progress. He was selected by a Board of Award comprised of the President and Executive Director of each of the three sponsoring organizations—American Association of State Highway and Transportation Officials (AASHTO), TRB and ARTBA. The Bartlett Award is unusual in that it is the only award jointly sponsored by the three organizations and is considered to be among the highest honors in the highway transportation profession. The American Society of Civil Engineers noted the technical contributions of Dr. Walton by honoring him with several awards including the 1999 Francis C. Turner Lecture for contributions to transportation research, education and practice, the 1992 James Laurie Prize for contributions to the advancement of transportation engineering; the 1987 Harland Bartholomew Award for contributions to the enhancement of the civil engineer's role in urban planning and development; and the 1987 Frank M. Masters Transportation Engineering Award, for innovations in transport facility planning. The Transportation Research Board presented Dr. Walton with the 1998 W.N. Carey, Jr. Distinguished Service Award which is among its highest honors in recognition of outstanding leadership in support of transportation research. In 1995, he was named TRB's Distinguished Lecturer in recognition of the research contributions over his entire career. The American Road and Transportation Builders Association presented Dr. Walton with the 1994 S.S. Steinberg Award recognizing his outstanding contributions to transportation education. The Institute of Transportation Engineers has awarded him the 1996 Wilbur S. Smith Distinguished Transportation Educator Award in recognition of outstanding contributions to the transportation profession by relating academic studies to the actual practice of transportation. He received the 1995 Distinguished Engineering Alumnus Award from the College of Engineering at North Carolina State University. The College of Engineering at The University of Texas at Austin awarded Dr. Walton the 1996 Joe J. King Award, their highest professional award, in recognition of his outstanding leadership to the engineering profession.

Dr. Walton has contributed to more than 400 publications in the areas of ITS, freight transport, and transportation engineering, planning, policy and economics, and he has delivered several hundred technical presentations. He has served as senior editor or contributing author for a variety of technical reference books and manuals and as a member of the editorial board for several international journals. Currently Dr. Walton has a research or consulting relationship with approximately 30 states.

Dr. Lei Yu, member



Dr. Yu is Professor of Transportation and Dean of College of Science and Technology at Texas Southern University. In his tenure at TSU, he has secured 40+ externally funded projects sponsored by Texas Department of Transportation (TxDOT), Federal Highway Administration (FHWA), Southwest Region University Transportation Center (SWUTC), Houston Advanced Research Center (HARC), and other organizations. Dr. Yu has led the development of highly recognized academic programs and top-of-the-line laboratory facilities. The Master of Science degree program in Transportation Planning and Management at TSU now has a high reputation internationally. He was the writer of the proposal that was funded by Port of Houston Authority with \$2 million dollars seed grant to offer a new academic program in Maritime Transportation Management and Security. The advanced laboratories that were developed by Dr. Yu, including full-motion driving simulator, mobile traffic lab, real-time

traffic monitoring system Mini-TranStar, and Portable Emission Measurement System (PEMS), have been providing unprecedented level of support to the university in accomplishing various academic and research programs. Dr. Yu also provided strong support to different levels of cooperation through inter-institutional programs. He has facilitated the signing of an international collaborative agreement between TSU and Beijing Jiaotong University in China, which has provided scholarships to TSU students to study in Beijing. Under his leadership in the position of Department Chairman, the Department of Transportation Studies was awarded the Department of the Year in April 2004.

Besides his administrative accomplishments, Dr. Yu also made great academic innovations. He has published more than 200 research papers and made 100 presentations. Dr. Yu is an active member of Institute of Transportation Engineers (ITE), the American Society of Civil Engineers (ASCE), the Transportation Research Board (TRB), and a number of other professional organizations. He also holds the membership in numerous committees, such as TRB Transportation and Air Quality Committee (ADC20), as well as other regional, national, and international councils, task forces, and organizations. Dr. Yu is a professional engineer registered in the State of Texas. He received his Ph.D. degree in Civil/Transportation Systems Engineering from Queen's University (Canada) in 1994, Master of Engineering Degree in Production and Systems Engineering from Nagoya Institute of Technology (Japan) in 1988, and Bachelor of Engineering Degree in Transportation Management Engineering from Beijing Jiaotong University (China) in 1984.

Dr. Zhanmin Zhang, member



Dr. Zhang is an Associate Professor in transportation engineering at the University of Texas at Austin. He earned his B.S. degree in civil engineering from Chang'an University in 1983 and then joined the faculty of the University. After being a faculty member for 7 years at Chang'an University, he returned to graduate school to earn a Master's degree and Ph.D. degree in civil engineering from The University of Texas at Austin in 1993 and 1996 respectively. He joined the Center for Transportation Research (CTR) at The University of Texas at Austin as a Research Associate upon receiving his doctoral degree. Following four years of research work at CTR, he joined the faculty of the Department of Civil Engineering at the University of Texas at Austin in September 2000. His current research interests include: infrastructure systems analysis and manage

ment, behavior and performance simulation of pavements, large-scale database and information systems, application of advanced technologies, and intelligent infrastructure systems.

Dr. Zhang is a member of two technical committees of the U.S. National Academies' Transportation Research Board (TRB): ADF10-Pavement Management Systems and AFH30-Emerging Technologies for Design and Construction. He is also a member of the Infrastructure Systems Committee of the American Society of Civil Engineers (ASCE). He serves as a member of the Technical Advisory Panel for the Research Management Committee 1 (RMC-1) of the Texas Department of Transportation. In addition, he has recently served on the National Research Council's Committee on "Renewal of DOE Infrastructure", which served the U.S. Department of Energy (DOE) in developing and implementing a corporate strategy for intelligent renewal of its infrastructure.

Dr. Zhang is an author or co-author of more than 75 technical papers, reports, and articles. He serves on the Editorial Board of the journal of Transportation Research, Part C: Emerging Technologies. He has also frequently served as a technical reviewer for prestigious journals such as Transportation Research, the Journal of Transportation Engineering, the Journal of Infrastructure Systems, and the Transportation Research Record.

2009 Member Changes on SWUTC Executive Committee

New Member: Dr. Dallas Little



Joining the SWUTC Executive Committee in June 2009, Professor Little currently is holder of the E. B. Snead endowed chair in Transportation Engineering in the Zachry Department of Civil Engineering of the Look College of Engineering at Texas A&M University. He teaches graduate courses in the areas of asphalt technology, chemical soil and aggregate stabilization, aggregate technology, micromechanics, and structural pavement design. He also teaches an undergraduate course for the Look College of Engineering in Materials Engineering designed for civil, chemical, mechanical, petroleum, industrial, and aerospace engineers.

Professor Little is also a Senior Research Fellow at the Texas Transportation Institute (TTI). In this position, he is responsible for the development of new research initiatives with government and private entities. He is currently the principal investigator for Texas A&M University's contribution to the Asphalt Research Consortium (ARC). The ARC is funded through the Federal Highway Administration to provide fundamental research in asphalt technology that will directly improve the ability to predict and impact the performance of the nation's asphalt pavement infrastructure. The ARC is a consortium of three universities, a national research institute and a nationally renowned private laboratory.

Professor Little is also associate director of the International Center for Aggregates Research (ICAR), which is a joint center between Texas A&M University and the University of Texas at Austin. ICAR is funded by an endowment from the aggregates industry. As associate director of ICAR, Little is responsible for the development of research initiatives that address the needs of the aggregates industry.

During his 33 years at Texas A&M University, and while pursuing his research interests in material science and engineering, asphalt technology, pavement design, soil stabilization, fracture mechanics, soil mechanics and foundation engineering, Professor Little has authored approximately 325 significant reports (including about 130 journal articles) and has given approximately 300 invited lectures on technical subjects including lectures in 42 states and 14 countries. He served two terms as chair of the Transportation Research Boards (TRB'S) Committee A2D04, "Characterization of Bituminous Mixtures to Meet Structural Requirements. He served as secretary of TRB committee A2J03, "Soil-Cement Stabilization" and Committee A2J01, "Chemical Stabilization of Soils." He served as chair of the Expert Task Group monitoring Strategic Highway Research Program (SHRP) contract A-003a, "Development of Asphalt Mixture Tests to Validate SHRP Asphalt Binder Tests and Specifications". He served as a member of the Federal Highway Administration's Expert Task Group on "Accelerated Testing of Asphalt Concrete Pavements" and is a member of the NCHRP panels 9-19 and 4-23 on the "Development of Pavement Performance Models". He recently completed an assignment as a member of the TRB Superpave Committee. Since 1992, Little has served as a member of the Expert Task Group for the FHWA project entitled "Fundamental Properties of Asphalts and Modified Asphalts". He also served as a member of the Blue Ribbon Review Committee for Bayex Corporation on use of geogrids to retard reflection cracking in asphalt overlays.

Professor Little is currently co-chair of the Federal Highway Administration's Expert Task Group on Fundamental Properties and Modeling of Asphalt Materials. He is a member of the Transportation Research Board (National Research Council) team to update the State of the Art Report on soil and aggregate stabilization with hydrated lime and also edited the Transportation Research Board's millennium report on soil stabilization with lime, Portland cement and fly ash. He is a member of the advisory board of the Texas Department of Transportation's Accelerated Testing Program. Dr. Little presently serves as a member of the Scientific Committee representing North America for the Treatment and Recycling of Engineering Materials for the Transportation Infrastructure (TREM-TI). He is also currently serving on the Scientific Committee for the International Conference on Advanced Characterization of Pavement and Soil Engineering Materials.

Professor Little is a member of a number of other professional societies and is a fellow in the American Society of Civil Engineers. He has been awarded the J.W. Emmons award by the Association of Asphalt Paving Technologists (AAPT) three times as a contributing author of the outstanding paper in asphalt technology (for 1981, 1998, and 2006). He received the Trinity Industries/C. V. Wootan Career Achievement Award in 1999 for Research Leadership in Materials Engineering. Recently several other technical papers co-authored by Professor Little have received recognition. These include two papers that were nominated for the K. B. Woods award by the Design and Construction Committee of the Transportation Research Board. These were, "Effect of Moisture on Material Properties and Fracture Resistance of Asphalt Mixtures", 2005, and "Ettringite Formation in Lime-Treated Soils: Establishing Thermodynamic Foundations for Engineering Practice", 2006. He co-authored a paper entitled, "Sensitivity of HMA Performance to Aggregate Shape Measured Using Conventional Image Analysis Methods", which received the "Best Scientific Paper Award" from the International Journal of Road Materials and Pavement Design in 2005. Professor Little recently completed a term as associate editor of the American Society of Civil Engineer's Journal of Materials Engineering, and is on the editorial board of the Journal of Applied Asphalt Binder Technology, University of Calgary.

Departing member: Dr. Eyad Masad



After serving on the SWUTC Executive Committee for the past three years, Dr. Masad stepped down in June of this year after he accepted a position at Texas A&M's new campus at Qatar. Currently, Dr. Masad holds a joint appointment as Halliburton Professor of Civil Engineering at Texas A&M's home campus and is a member of the mechanical engineering program at Texas A&M at Qatar. His expertise lies in developing innovative materials for improving the performance and qualities of infrastructure systems, and he is looking to establish regional research centers to support development in Qatar.

In October, 2009 Dr. Masad was appointed Dean for Research and Graduate Studies at Texas A&M at Qatar.

Office of the Director

Dock Burke, Director

Dock Burke is the Director of the Southwest University Region Transportation Center at the Texas Transportation Institute. Currently a Senior Research Economist at the Institute, he has served as the Principal Investigator or Co-P.I. of 52 research projects, authored or co-authored 100 research reports and papers, and has made 75 presentations on a wide variety of transportation related issues since joining TTI in 1969. He is the 1998 recipient of the *TTI Career Achievement in Research* award and a 2003 recipient of the *Regents Fellow Service Award* presented by the Board of Regents of the Texas A&M University System.



SWUTC Administrative Staff:
Dock Burke and Barb Lorenz

Barbara Lorenz, Program Coordinator

Barbara Lorenz serves as Program Coordinator in the SWUTC, a position she has held since 1992. Ms. Lorenz oversees the daily operational activities of the Center. Ms. Lorenz, a graduate of Texas A&M University, has been employed with TTI for 31 years. She is the 2003 recipient of the *C.J. Keese Career Achievement in Administrative/Technical Support* award, which is TTI's highest award for excellence in administration.

Judy Shafer, Administrative Associate

Ms. Judy Shafer has served as Administrative Assistant for the SWUTC Research Program at UT Austin since 1994. She is responsible for the initial call for research ideas, preparation of award notices, and processing proposal submissions. Ms. Shafer assists principal investigators with travel, funds transfers, equipment requests, technical report preparation, and payments to research project participants and consultants. She also prepares and submits annual report and directory data to regional office, and assists with the processing of SWUTC program contracts.



SWUTC Associate Directors

Dr. Gene Hawkins, Associate Director - Transportation Scholars, Texas A&M University

(See bio on page 11)

Dr. Tim Lomax, Associate Director for Transportation Research at Texas A&M University



Dr. Lomax is a Research Engineer at the Texas Transportation Institute and member of the Mobility Analysis Program. He is internationally known for his research to quantify urban mobility problems and communicate his results to many different audiences. He has been active in devising practical mobility solutions employing both changes to practices and improvements in design and operations. His work has most recently been highlighted by his successful and innovative research in devising and implementing measures (often-called the *Texas Congestion Index*) to gauge and compare transportation systems' performances in urban areas. He is a professional engineer and is a member of the Transportation Research Board, Institute of Transportation Engineers, Association for Commuter Transportation and American Society of Civil Engineers.

Mr. Khosro Godazi, Associate Director for Transportation Research and Education at TSU



Mr. Godazi, Associate Director for the SWUTC, has 19 years of teaching and administrative experience at Texas Southern University. He holds a B.S. in Civil Engineering Technology and a M.S. in City Planning. He is Director of a 4-week Texas Summer Transportation Institute that has been held in Houston, at Texas Southern University. In addition he spearheads the Transportation Studies Mentorship Program and directs the Transportation Club at the Middle College for Technology Careers, which is a high school located in Houston. Mr. Godazi has coordinated numerous conferences for the Center for Transportation Training and Research and has extensive experience in transportation research. He has served as Principal Investigator on numerous SWUTC projects and has completed the Dwight David Eisenhower database software for FHWA. Mr. Godazi teaches transportation students in transportation software applications and quantitative statistics methods.

Dr. Randy Machemehl, Associate Director for Transportation Research at UT-Austin



Dr. Machemehl is the Director of the Center for Transportation Research and is the Nasser I. Al-Rashid Centennial Professor in Transportation Engineering at the University of Texas at Austin. In addition to these duties, Dr. Machemehl has distinguished himself as a researcher focusing particularly on transportation system operations and he has published over 200 papers and reports. His administrative positions have included service as the Associate Chairman of UT's Civil Engineering department. He is also a registered professional engineer, a registered professional land surveyor and has memberships in the Institute of Transportation Engineers, the American Society of Civil Engineers, the Canadian Society for Civil Engineering, National Society of Professional Engineers,

the Transportation Research Forum and the Council of University Transportation Centers (CUTC). Dr. Machemehl is the current president of CUTC. He is a retired U.S. Army Reserve Corps of Engineers officer.

Dr. C. Michael Walton, Associate Director - Advanced Institute, UT-Austin

(See bio on page 13)



April 24, 2009 meeting of the SWUTC Executive Committee and Director's Office at the Center for Transportation Research headquarters building in Austin, Texas.

L-R: Dennis Christiansen, Gene Hawkins, Melissa Tooley, Mike Walton, Rick Collins, Carol Lewis, Khosro Godazi, Randy Machemehl, Herb Richardson and Lei Yu

Education Program



Transportation Workforce Development

Transportation education is an essential element in the overall process of developing a workforce with the skills and leadership qualities to guide the transportation industry of the future. The SWUTC has invested heavily in the development of human capital creating a “pipeline” process which takes in students at secondary school levels, adds high school and baccalaureate programs and culminates in graduate specialties in transportation science and engineering.

The SWUTC supports the Transportation Scholars and the Advanced Institute Programs that are integrated into established degree-granting university departments at Texas A&M University and the University of Texas at Austin. Additionally, SWUTC supports the academic enrichment of a well-developed graduate transportation studies program at Texas Southern University. The SWUTC seeks to enhance these programs by strengthening the multidisciplinary qualities of a body of transportation science that will prepare today’s students for leadership in the emerging information-rich economy.

SWUTC Pre-College Initiative Highlights

During the previous and current UTC grant, several self-sustaining programs have been developed that take transportation concepts to public schools to attract future transportation professionals. One early example was the development of **educational modules** that introduce careers in transportation for students in grades K-12. These modules developed for use in the classroom are still being downloaded by educators U.S. wide via the internet at <http://tti.tamu.edu/groups/cpd/resources/presentations/index.htm>. Another initiative was the development of **road-show promotional materials** for use at career fairs to encourage students to pursue careers in transportation. The success of this program is reflected in the fact that these materials are currently being requested by educators nationwide for use at various career fairs. These road-show promotional materials are available for free download at <http://tti.tamu.edu/groups/cpd/resources/brochures/index.htm>. Also available on this same website is the **Transportation Career Guide** developed in 2003 by SWUTC researchers. The *Transportation Career Guide* is a tool to help increase awareness of transportation as a profession to high school students and to help students set their career goals and objectives within the area of transportation. Another important success was the promotion of **transportation science at science fairs**. By the establishment of transportation specific categories, transportation science is now being promoted on a continuing basis at Texas science fairs along with meteorology, physics and other sciences. The **Go Girl!** program initiated in 2006 which provides one-day workshops for girls in grade levels K-9 to gain hands on experience and insight into what transportation, engineering, and technology careers offer. **Go Girl!** has developed into a sustainable, standing room only, yearly program. The award winning **Recruitment Toolbox for Transportation Professionals** developed in 2007 and available at <http://ite.org/councils/Education/Recruitment/default.asp> continues to provide fresh hands-on activity ideas to educators. Through these efforts and resources, SWUTC researchers are able, on a yearly basis, to introduce a vast number of K-12 students U.S. wide to possible careers in transportation.

New Pre-College Initiatives for 2009

Partnering with AVID to Create Transportation Scholars

SWUTC Project #169115/P.I. Debbie Jasek and Melisa Finley, TAMU



AVID students participating in Zoom Mobile transportation exercises.

To address the predicted future decline in trained transportation engineering professionals, Co-P.I.'s **Debbie Jasek** and **Melissa Finley** of Texas A&M University seized on the opportunity to stimulate student awareness in transportation careers and employment opportunities by creating a partnership with an existing program called Advancement Via Individual Determination (AVID) that targets students with interests in Science, Technology, Engineering and Mathematics (STEM). AVID is an in-school academic support program for grades 5-12 that prepares students for college eligibility and success. AVID places academically average students in advanced classes. It levels the playing field for minority, rural, low-income and other students without a college-going tradition in their families. The focal point for AVID is an elective class, held during the regular school day, where they receive the academic and motivational support to succeed.

This study developed a one day workshop and event for students and student groups grade levels 5 through 12 that offered an opportunity to gain hands on experience and insight into what transportation, engineering, and technology careers have to offer. This event utilized a two pronged approach. First, engineers and transportation professionals went into the class room to introduce transportation concepts during the AVID class. The second part included a field trip for AVID students to either a college campus or other transportation careers related location. The event provided experiences to encourage interests in engineering, science, and math. It also offered exposure and mentoring from role models that currently work in the transportation fields. This provided a venue that enabled students to recognize their interests in math and have an early successful experience, two of the crucial factors to encourage careers in technology and engineering. This event was also designed in a format so that it could be used as a prototype by any college or university or professional organization.

Two events were conducted in May, 2009 in the City of Killeen, Texas where a total of 149 7th and 8th grade students participated. Two more events are scheduled during the fall 2009 semester.



AVID participants at Killeen, Texas

2009 SWUTC Higher Education Highlights

SWUTC Provides Support to Bush School of Government and Public Service

SWUTC Project #476660-00010/P.I. Eric Lindquist, TAMU



Eric Lindquist

This project, led by **Dr. Eric Lindquist** of Texas A&M University, supported the Bush School of Government and Public Service course entitled *The Regional Impact of Climate Change on Transportation Infrastructure and Decision Making*. The content focused on the current and future institutional structures and legislative authority necessary to implement the major infrastructure investments for resilience and recovery in response to the impact of climate change in the Houston-Galveston area in Texas.

The Capstone Seminar was a two-semester project in which a team of students worked for a “real-world” client to help solve a “real-world” management and/or policy issue. It culminated in a formal, written report and an oral presentation in which that report was delivered to the client. Although the projects are supervised by a faculty member, the students typically have broad discretion in allocating tasks among themselves, in communicating with clients, and in establishing and ensuring compliance with deadlines for the accomplishment of different phases of the project.

Preliminary consultation with the Houston Galveston Area Council (HGAC) resulted in the identification of the general problem to be addressed. The HGAC and its constituents are concerned that the region may not have the proper and appropriate institutional structures in place to direct major investments for recovery and for developing resilience in response to the impacts of climate change. As the impact from climate change is perceived as a regional problem that does not adhere to institutional boundaries, the Council is also concerned that they may not have the necessary legislative authority to share revenues and plan collectively to address these challenges.

The Capstone students presented their final project results in May, 2009 at two venues: 1) the standard end of the year Capstone project presentation at the Bush School, and 2) for the client and invited guests in the study area. Results, currently in final edit, will also be published in a professional research report and disseminated to the client, project stakeholders, and made available on the Bush School and SWUTC websites.

SWUTC Summer Undergraduate Fellows Program

The SWUTC Summer Undergraduate Fellows Programs at the University of Texas at Austin and Texas A&M University continue to be extremely successful recruiting endeavors to attract a diverse group of students into the graduate programs in transportation. Each year, the Summer Undergraduate Fellows Program recruits undergraduate juniors and seniors from other universities and from diverse academic backgrounds into a summer-long program in transportation research and education as a first step towards graduate study in transportation. The students at both UT-Austin and TAMU have the opportunity to work with researchers and gain exposure to many different areas of transportation research. Students make field trips to various transportation agencies and attend professional meetings such as the summer

meeting of TexITE. At the end of the summer term, the students make presentations on their research and produce a paper for publication. At Texas A&M, the papers are published annually as a *Compendium of Student Papers* and posted on the SWUTC website. During the summer 2009 session, 4 undergraduate fellows participated in the program at TAMU, 9 participated in the UT-Austin program.

The Summer Fellows Program has historically achieved a near 100% retention of undergraduate students into the graduate programs of transportation engineering.



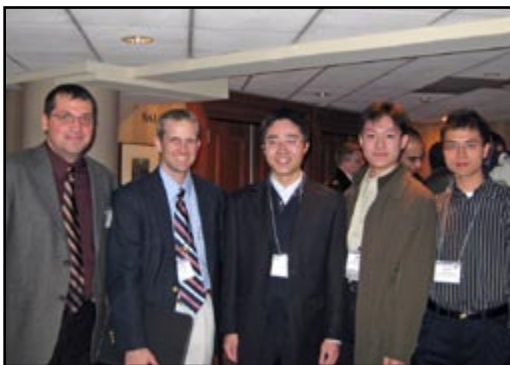
2009 Undergraduate Fellows at Texas A&M University

SWUTC Advanced Institute and Transportation Scholars Programs

The SWUTC continues to support graduate programs at each of the three consortium member universities. The ultimate goal of the SWUTC graduate programs is to prepare a highly qualified cadre of new professionals into transportation science. The Transportation Scholars Program at Texas A&M University, the Advanced Institute at the University of Texas at Austin and the graduate program at Texas Southern University provide stipends to students to participate in classroom and sponsored research activities. In addition, the program provides increased communications skills as students make presentations, participate in debates, write proposals and reports. Students also participate in technical tours and professional meetings throughout the year.

For the 2009 program, 16 graduate students participated in the TAMU program, 25 in the UT-Austin program and 7 at TSU.

As an annual event, SWUTC also sends graduate students involved in the SWUTC education programs to the Transportation Research Board meeting in January. This year, in addition to those students, the SWUTC provided travel assistance to 32 other Texas A&M University Civil Engineering students to attend the annual meeting. While attending the meeting, many of these students gained valuable experience while presenting papers based on their research work and attending poster and conference sessions.



SWUTC Students at TRB

"The 88th TRB Annual Meeting was my first TRB experience and I was left in awe by the sheer grandeur of the meeting. I could not believe the number of people, presentations, sessions, committee meetings, exhibits that was packed into five days. There were participants from various fields, universities, industry and representatives from government at the meeting. I chose to attend sessions that are related to my area of interests and learned about new research developments and existing practices. I also had an opportunity to meet professionals, faculty, and students from different parts of country. I was very happy to see so many people work in the field of transportation and its diversity striving towards a better living. Given a chance I will never miss an opportunity to attend another TRB meeting." - Sam Madiri from post-TRB evaluation survey

STUDENT AWARDS

SWUTC's Student Award Winners

Each year, in addition to selecting the overall SWUTC Outstanding Student to represent the SWUTC at the CUTC banquet and UTC awards program, the SWUTC honors other students for their academic, professionalism and leadership achievements. Each of the three major awards presented yearly at the SWUTC - the *Naomi Ledé Outstanding Masters Student Award*, the *William J. Harris Outstanding Ph.D. Student Award* and the *Robert Herman Outstanding Student Award* - comes with a \$1,000 cash award.

Robert Herman Outstanding Student Award

Upon completion of his undergraduate education in Civil Engineering from the Indian Institute of Technology at Madras in India, **Mr. Naveen Eluru** enrolled at the University of Texas at Austin to pursue his Masters in Transportation. While at UT-Austin, Mr. Eluru enrolled in courses that highlighted the multi-disciplinary nature of transportation such as operation research, optimization and economics. As part of his Master's thesis, Mr. Eluru examined the impact of seat belt use in modeling injury severity of drivers involved in traffic crashes. Afterwards, he made the decision to stay at UT-Austin and pursue doctoral studies.



For his doctoral thesis he is examining activity-travel pattern attributes with an emphasis on incorporating the effect of transportation and land-use interactions on activity-travel patterns. The objective of his dissertation is to develop advanced econometric models that appropriately account for behavioral realism. While examining activity-travel patterns for his dissertation, he also worked on a wide range of subject areas including transportation safety, residential and work place location choice, bicycle ownership, and household vehicle ownership.

Mr. Eluru has also participated in several sponsored research efforts. Through the SWUTC research program, he incorporated econometric models into a Comprehensive Econometric Microsimulation for Urban Systems (CEMUS). He also presented a paper at TRB in 2008 based on this research. In addition, he has taken part in TxDOT research efforts in which he contributed to developing activity-based modeling software for metropolitan regions in Texas.

Mr. Eluru has been an active member of the ITS and ITE organizations. He is currently a young committee member for the TRB Committee on Transportation Education and Training. His long term goal is to pursue a career in academia as a professor to contribute to the transportation community through research and teaching. Mr. Eluru's major professor is Dr. Chandra Bhat.

William J. Harris Outstanding Doctoral Student Award

Dr. Rachel B. Copperman began her graduate studies at the University of Texas at Austin in August 2004. She enrolled at UT-Austin immediately following her graduation from the University of Virginia with a B.S. in Systems Engineering. While in pursuit of a Ph.D., she also received her M.S.E. in Civil Engineering from UT-Austin.



Dr. Copperman's dissertation research focused on understanding the motivations and behavior underlying children's travel patterns. As a graduate research assistant she also researched in the area of activity-based travel demand modeling by contributing to the development of a continuous-time activity-travel prediction software for the Dallas Fort-Worth (DFW) area. During her graduate studies, Dr. Copperman was a recipient of the Eisenhower Graduate Transportation Fellowship and a UT Continuing Fellowship. She attended the 2005 ENO Leadership Development Conference and was a recipient of the 2006 SWUTC Dr. Naomi Ledé Award to the Outstanding Masters Student. She is also the past President and past Vice President of the University of Texas at Austin student chapter of ITE.

After receiving her Ph.D. in August 2008, Dr. Copperman accepted a position as a Travel Demand Forecaster at Cambridge Systematics, a leading transportation planning consulting company.

Dr. Copperman's major professor while at the University of Texas was Dr. Chandra Bhat.

Naomi Ledé Outstanding Master Student Award

Mr. Cameron L. Williams received his M.S. and B.S. from Texas A&M University where he graduated Summa Cum Laude. Cameron's thesis focused on developing an automated method using the global positioning system for identifying no-passing zones on rural highways. While at Texas A&M, Cameron received a fellowship from the SWUTC's Transportation Scholars Program and was named a 2007 ENO Fellow for which he attended the ENO Leadership Development Conference. He also received the Texas Transportation Institute's Keese-Wootan Transportation Fellowship, the Zachry Department of Civil Engineering Department Head Fellowship, and the Texas A&M College of Engineering Turner Leadership Award. In 2007 he was named Texas A&M's Most Outstanding Masters Student in the SWUTC. Cameron served as the president of Texas A&M's 2007 ITE chapter, which earned the 2007/2008 Outstanding Student Chapter Award for ITE District 9. Previously, Cameron served for one year as president of the Texas A&M Student Engineers' Council.



While at TAMU, Cameron's major professor was Dr. Gene Hawkins.

Cameron was chosen to represent the SWUTC at the annual UTC Outstanding Student of the Year Awards ceremony during TRB's Annual Meeting in January, 2009. While at the meeting, Cameron also received the prestigious *Milton Pikarsky Memorial Award* which is awarded by CUTC to two students annually for the best master's thesis and the best dissertation in transportation science and technology. Williams received a monetary award of \$1,500 for his master's thesis, which focused on developing an automated method for identifying no-passing zones on rural highways by using a global positioning system.

Cameron L. Williams is currently employed in the traffic engineering services at Walter P. Moore and since being employed there has had the unique opportunity to work on a Safe Routes to School Program for 48 elementary schools in the City of El Paso, Texas.

SWUTC Graduate Student Achievements

Ian Hlavacek, recent graduate from the University of Texas Department of Civil, Architectural, and Environmental Engineering and former SWUTC Advanced Institute member, received the *2009 Young Member of the Year* from the Houston area section of the Texas District of the Institute of Transportation Engineers (TexITE). This award is presented annually and recognizes an individual member of the Houston Area Section for leadership, commitment to excellence and activism within TexITE and other organizations.

Mr. Hlavacek currently works as a Senior Associate Engineer for Traffic Engineers Inc. in Houston, Texas.



Ian Hlavacek



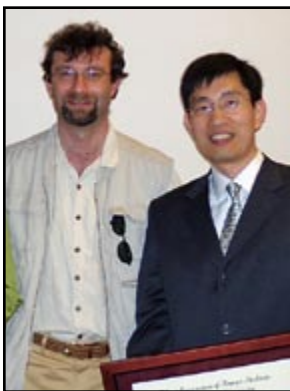
Ben Sperry

Ben Sperry Ph.D. student in the Zachry Department of Civil Engineering at Texas A&M University and a fellow in the SWUTC Transportation Scholars Program, was chosen to participate in the Eno Leadership Development Conference in May 2009. Each year, the Eno Leadership Development Conference gives 20 of the nation's top graduate students in transportation a first-hand look at how national transportation policies are developed. Students apply to the program early in the year, and those selected as "Eno Fellows" go to Washington, DC, for a week of meetings with federal officials and leaders of business and non-profit organizations in the spring. The 17th Annual Eno Leadership Development Conference was held the week of May 11-14, 2009.

Susan Paulus M.S. student in the Zachry Department of Civil Engineering at Texas A&M University and a fellow in the SWUTC Transportation Scholars Program, was selected for an Eisenhower Graduate Transportation Fellowship during the 2008-2009 academic year. This program provides funding for the pursuit of Master's Degrees or Doctorates in transportation related fields. The program objective is to attract qualified students to the fields of transportation education and research, and advance transportation workforce development. The program is intended to help upgrade the scope of knowledge of the entire transportation community in the United States and encompasses all modes of transportation.



Susan Paulus



Professor Luca Quadrifoglio
and Xiugang Li

Xiugang Li, Ph.D. student in the Zachry Department of Civil Engineering at Texas A&M University and fellow in the SWUTC Transportation Scholars Program, received the Association of Former Students and Office of Graduate Studies *2008-2009 Excellence in Doctoral Research Award* on March 25th. This annual award recognizes graduate students for distinguished research or teaching. He is a previous recipient of SWUTC's *Robert Herman Award*.

Advanced Institute and MS student at the University of Texas at Austin, **Ms. Beth Porterfield** supervised by Dr. C. Michael Walton received a \$1000 ITS Texas Scholarship in September at the ITS Texas 2008 Annual Meeting. Selection for this award is based on academic ability in a masters program in any ITS-related field and stated career objectives.



Beth Porterfield

Student Profile of Success: Valerie A. Briggs



Valerie Briggs

Former University of Texas SWUTC Advanced Institute student and SWUTC researcher, **Valerie Briggs**, is Team Leader, IntelliDriveSM, Knowledge Transfer & Policy, for USDOT's Vehicle Infrastructure Integration (VII) Research Program. The VII program is a cooperative effort among the U.S. Department of Transportation (USDOT), State governments, the automotive industry and others to develop and test an information infrastructure that uses advanced communications technologies to exchange real-time information between the roadside and vehicles and among vehicles to improve safety and mobility.

Valerie joined USDOT in August 2007 from the American Association of State Highway and Transportation Officials (AASHTO), where she lead AASHTO's transportation operations group responsible for traffic operations, intelligent transportation systems, telecommunications, and transportation security programs. She has also consulted and conducted research in these areas.

She also believes in supporting her community and those in need. Valerie teaches adult English-as-a-Second-Language and has fundraised for the Big Brothers and Big Sisters of the National Capitol Area. Since 2003, she organized and ran a start-up non-profit organization that funds art education for disadvantaged youth in Africa and the U.S.

Former Transportation Scholars Graduates Return to Guest Speak

On December 3, 2008, former TAMU-ITE Chapter President and 2008 graduate of the TAMU Transportation Scholars Program and current employee of Walter P. Moore, **Mr. Cameron Williams** returned to campus to deliver a presentation to the current student chapter of ITE about the opportunities and challenges faced by recent engineering graduates and what they can do to better prepare themselves for the workplace.

Mr. Dale Picha, currently Director of Traffic and Transportation for the City of Bryan, Texas and 1994 graduate of the TAMU Transportation Scholars Program, returned to campus on June 9, 2009 to make a presentation to the student chapter of ITE on local traffic engineering and operational issues associated with street closures and parking for special events. Specifically, issues faced by the City of Bryan during the Texas Red Steak and Grape Festival which hosts more than 20,000 visitors annually.



Dale Picha speaks to TAMU Student Chapter of ITE

Research Program



SWUTC pursues a balanced program of transportation research (transit, highway, and multimodal) by selecting those projects that reflect our vision, theme and strategic thrusts. Some of the specific research program sub-themes are: improved linkages between the U.S. and Mexican transportation systems, developing transportation solutions to improve the livability of our neighborhoods and communities and the quality-of-life for their inhabitants, development of transportation-based solutions to various infrastructure, environmental, and safety problems, and development of a superior transportation workforce for the 21st Century. For a listing and description of new, on-going and completed research projects please visit our website at <http://swutc.tamu.edu/research.htm>.

Selected 2009 Research Highlights

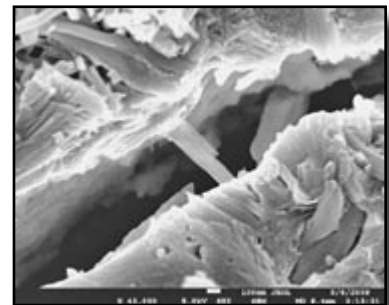
Infrastructure Resiliency

Research Effort Produces Significantly Stronger Cement Paste

SWUTC Project #476660-00011/P.I. Rashid Abu Al-Rub

The main objective this research activity was to investigate the unexplored potential use of carbon nanotubes (CNTs) as nano reinforcements in improving the tensile/flexural strength and fracture toughness of Portland cement paste, which is one of the most pervasive and important commodities consumed worldwide. CNTs are carbon fibers with diameters on the nanometer scale. They have a combination of desirable multifunctional properties such as high mechanical strength and stiffness, and thermal conductivity that make them ideal candidates for use in concrete materials.

The research team headed by **Dr. Rashid Abu Al-Rub** at Texas A&M University created a nanocomposite cement paste material reinforced with carbon nano fibers (CNFs) and carbon nanotubes (CNTs) with strength and ductility several orders higher than the strength and ductility of normal concrete. When CNTs were added to the cement paste as reinforcements they acted as bridges across micro-cracks to form reinforcing mechanisms and arrest cracking in the cement matrix. This nanocomposite concrete has the ability to absorb high levels of energy due to applied forces through preventing the nucleation and growth of macro- and micro-cracks, but lead to the formation of a network of nano-cracks that increase the ductility and fracture toughness of concrete significantly. This achievement is an important initial step towards fabricating crack-free concrete structures with high levels of strength and ductility that are very important for fracture-resistant and earthquake-resistant infrastructures.



Crack-bridging in Cement Paste by Carbon Nano Fibers

Research Studies Relationship between Vehicle Ownership, Retirement and Use Decisions in Response to Rising Fuel Prices and Implications for Carbon Emissions Forecasts

SWUTC Project #169202/P.I. Kara Kockelman

Rising gasoline prices, emerging engine technologies, and changes in fuel-economy policy will result in a variety of behavioral changes, including household holdings (number of vehicles, make and model), vehicle purchase and retirement timing decisions, mode choice and travel distances, speeds, and emissions. This research conducted by **Dr. Kara Kockelman** at the University of Texas at Austin enables transportation planners and demand modelers to better anticipate the near- and long-term responses of U.S. households to a variety of vehicle design and pricing assumptions, in order to forecast the nation's future vehicle fleet holdings and transport-based carbon emissions. To better estimate vehicle fleet evolution across the region, a vehicle choice survey (of 660 respondents) was conducted on ownership decisions and owner preferences under various scenarios, coupled with calibrated models to microsimulate Austin's personal-fleet evolution. Results suggest that most Austinites' (63%, population-corrected share) support a feebate policy to favor more fuel efficient vehicles. "Feebate" combines fees and rebates, i.e., fee amounts paid by owners of vehicles that are below the targeted fuel efficiency are used to finance rebate incentives for consumers to purchase vehicles above the target fuel efficiency. Top purchase criteria are price, type/class, and fuel economy (with 30%, 21% and 19% of respondents placing these in their top three). Most (56%) respondents also indicated that they would consider purchasing a plug-in hybrid electric vehicle (PHEV) if it were to cost \$6,000 more than its conventional, gasoline-powered counterpart. And many respond strongly to signals on the external (health and climate) costs of a vehicle's emissions, more strongly than they respond to information on fuel cost savings. Additionally, an enhanced version of the survey has been dissemination (in October 2009), to a US sample of 1000 respondents.



The paper "Survey and Analysis of Household Energy Consumption & Carbon Footprints: Opportunities for Behavioral Changes" produced by this study was presented at the TRB 12th Conference on Transportation Planning Applications in May 2009 and nominated as a **best paper** by the Transportation Planning Applications Committee ABD50.

Enhancing Mobility

Study Measures the Benefits of Intercity Passenger Rail

SWUTC Project #169116/P.I. Curtis Morgan

In its January 2008 *Transportation for Tomorrow* report, the National Surface Transportation Policy and Revenue Study Commission identified the need for a "fast and reliable" intercity passenger rail network as a key component of America's mobility future, with a focus on developing new or improving existing passenger rail service in intercity travel corridors of 100 to 500 miles in length. As our nation moves forward with the development of an intercity passenger rail network, the burden falls upon policymakers to ensure that the significant investment of public resources necessary to build such a system is being spent in the most efficient manner possible. The introduction of a passenger rail route on an intercity corridor will

divert some trips from other modes (highway, intercity bus, and air), but will induce some additional trips. Some of these new trips will be made by travelers who had no other option (such as those without access to an automobile, disabled, or the elderly), while other new trips are simply more attractive given the availability of passenger rail. In all of the above cases, the provision of passenger rail provides distinct and measurable benefits to the public investment; to guide the spending of public resources, a better understanding of these benefits is desired.

With this study, Principal Investigators **Mr. Curtis Morgan** and **Mr. Ben Sperry** of Texas Transportation Institute sought to gain a greater understanding of the mobility implications of providing passenger rail service in a short to medium distance (100 to 500 mile) intercity travel corridor. To accomplish this objective, they administered a travel survey in July to passengers on-board the *Heartland Flyer*, an intercity passenger rail line that runs a 206-mile route between Oklahoma City, Oklahoma and Fort Worth, Texas. Measures studied included the number of automobile, intercity bus, and air trips diverted onto the passenger rail route, as well as the number of trips that are induced by the provision of passenger rail service in the Oklahoma City to Fort Worth intercity travel corridor. Preliminary findings show that a majority of *Heartland Flyer* passengers are making trips to visit family or friends or other types of short leisure trips. Analysis also showed that about half of the passengers would drive for their trips if the rail service were to be discontinued, resulting in an additional 35,000 vehicles annually on Interstate 35 and other parallel roadways. The final analysis will provide a more detailed picture of the impacts of the rail service and can be used by states and other entities to support planning efforts for future expansion of intercity passenger rail service in the southwest region and beyond.

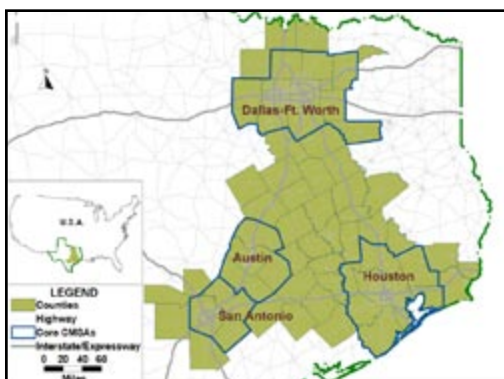


Passengers Boarding *Heartland Flyer* in Norman Oklahoma

Improved Planning for Infrastructure Investments

Implications of Future Travel Demand in the Texas Triangle

SWUTC Project #167276/P.I. Ming Zhang



Texas Triangle

The Texas Triangle is one of the ten emerging megaregions identified in the continental U.S. The Triangle has an area of 57,430 square miles, 66 counties, and a total population of nearly 15 million in the year 2000. Four core metropolitan areas – Austin, Dallas-Fort Worth, Houston, and San Antonio are encompassed by the Texas Triangle. By the year of 2050, the Texas Triangle is expected to grow by an additional 10 million people. The population growth will impose tremendous pressure on the region's already burdened transportation infrastructure.

Understanding the nature of future travel demand in the Triangle is the first critical step towards smart decision-making in transportation investments. This research conducted by **Dr. Ming Zhang** of the University of Texas at Austin examines

the future travel demand in the Triangle in two parts. Part One projects the total amount of travel demand by year 2050. The projections were based on three behavioral characteristics of human travel. First, as income grows, demand for more and faster mobility increases. Second, on average, individuals allocate 1-1.5 hours per capita per day for travel. Third, people allocate 10-15% of per capita personal income for transportation related expenses. The study results suggest that the Texas Triangle would experience an enormous amount of mobility growth by year 2050. Measured by person-kilometers of travel (PKT), the total mobility demand in the Triangle region is projected to grow nearly four times from 480 billion in year 2000 to 1.8 trillion in year 2050. Per capita PKT is expected to increase from 32,700 to 61,000 for the same time period, higher than the North American regional average.

In Part Two of the study, distribution of the mobility demand was estimated among air, rail, and roadway travel modes. This study projected that the total travel by all modes would increase. The mode share structure would also change. People would switch to high-speed transport gradually. The high speed share for travel would increase dramatically in the next 40 plus years. By year 2050, more than 70% of travel is likely to be accomplished by high-speed transport. The study applied an aggregate model to project total travel demand and shares of different travel modes in the Triangle region. Currently in Texas, air transportation offers the only high-speed mode of inter-city travel. By 2050, high-speed travel demand would rise to more than 10 times of the 2000 level. It is unlikely that the demand for high-speed travel can all be accommodated by air travel because of the capacity constraints in airway network, gate and runway, and airport operations. Accordingly, planning for megaregional transportation should seriously consider high-speed travel in the form of High Speed Rail (HSR) to accommodate the future travel demand in the Triangle Region. The sooner the HSR is incorporated in the regional transportation plan, the better the Triangle would prepare for the future.

The results of this study demonstrate that the expected growth of future travel demand in the Texas Triangle will impose tremendous pressure on the transportation infrastructure in the Triangle area. Transportation planners should take action now in order to be better prepared to accommodate the increasing travel demand. The results of this study provide valuable references to the decision-makers on future transportation investment needs in Texas.

Evaluating Shifts in Global Trade

Impacts of the Panama Canal Expansion on the Texas and U.S. Economies

SWUTC Project #476660-00062/P.I. Robert Harrison



Shipping Traffic Traversing the Panama Canal

Large volumes of U.S. trade pass through the Panama Canal, a century old facility that is nearing its maximum capacity. U.S. trade with Asia continues to set new records, much of it passing through West Coast port terminals and reaching the south-west regional markets on Class One double-stack rail routes. Congestion at southern Californian terminals in 2004 stimulated shippers to try other transportation routes and currently one of the most successful of these links Asia-East Coast ports and Gulf port terminals via the Panama Canal. The Port of Houston, for example, has three liner services of this type, all carried on vessels that could pass through the canal, termed Panamax vessels. In addition to containers, large volumes of bulk and project U.S. trade cargo also passes through the Panama Canal.

The Canal Authority received approval in 2006 to proceed with the development of a new parallel lock system capable of handling many of the larger vessels now being used in global trade and raising canal capacity. Completion of the \$5 billion canal expansion is due to be completed in 2014, on the 100 year anniversary.

To manage the demand for freight transit more efficiently and to fund the impending canal expansion canal transit tariffs have been increasing sharply since 2001 . These increases affect the cost of transporting goods consumed by the United States, particularly those moving on Asian trade lanes to Atlantic and Gulf ports. This study conducted by **Mr. Robert Harrison** of the University of Texas at Austin estimated the effects of predicted canal tariffs on traded goods transiting the canal and bound for the U.S. The study also examined the attitudes of the Gulf and Atlantic port authorities who it found are enthusiastically supporting the project and using it to bolster post-2014 demand. The study finds that few large container vessels will make Gulf port calls in the 2014-2020 periods. The vessels will serve load centers in the Caribbean or Panama itself and boxes will be transloaded to smaller ships in a “hub and spoke” system. Thus boxes can be distributed across more Gulf terminals (including one in Mexico) rather than serving just one port like Houston. The new system will be significant for the South Atlantic ports (like Savannah) and for Norfolk where linking to the new Heartland corridor can efficiently service Philadelphia and Chicago markets. Consequently, Californian ports are now nervous and vigorously promoting their trans-continental land bridge - port terminals and UP-BNSF routes - claiming lower costs and faster schedules. Ultimately, however, the locks will provide an important US global trade corridor enhancement which will provide a much needed “balance” to the current Asian-US trade system which is concentrated at southern Californian terminals where congestion and high social costs have been the norm.

Highway Safety

Road Condition Warning System for Highway Collision Prevention

SWUTC Project #476660-00043/P.I. Yi Qi

The Vehicle Infrastructure Integration (VII) program is to revolutionize transportation by creating an enabling communication infrastructure that will provide a wide range of safety applications. This research conducted by **Dr. Yi Qi** of Texas Southern University investigated the application of the VII technology for preventing highway collisions under various driving conditions. For this purpose, three VII-based driver warning systems (RHDWS, HLCWS and WZDWS) were designed and tested in designed testing scenarios by driving simulator experiments.

The *Rural Highway Driver Warning System* (RHDWS) is designed for preventing run-off-road (ROR) collisions in curvy rural highways. In this system, three types of warnings were provided to the drivers: 1) lane departure warning, 2) curve ahead warning, and 3) speed limit warning. With the help of such systems, drivers would have enough time to adjust their speeds and driving behaviors to respond to the unexpected roadway conditions ahead, such as sharp curves. The experimental results show that this system can significantly reduce the ROR collisions in a rural highway environment. According to the survey of the tested drivers, the system is easy for the driver to use and helpful to them in safely negotiating a curvy rural highway.



TSU Simulator: Urban Area Practice Session

The *Highway Lane Change Warning System* (HLCWS) is designed for preventing the collisions associated with lane changes. The designed system is tested on an urban highway with heavy traffic volume and high speed limits by driving simulator experiments. The test results show that this system will help drivers avoid unsafe lane changes and that the system has the potential to reduce collisions. According to a survey of the tested drivers, the system is easy for drivers to use and helpful in making safe lane changes.

Work Zone Driver Warning System (WZDWS) is designed for preventing the collisions associated with work zones. It includes an in-vehicle driver warning subsystem and a real-time Dynamic Message Sign (DMS) subsystem. To test the effectiveness of the proposed work zone collision prevention system, three different types of driving simulator testing scenarios are generated. The first type is the baseline scenario with the basic traditional work zone safety control measures. The second type is the comparison scenario which uses the prevailing work zone control measures. The third type is the study scenario which employs the proposed VII technology based work zone collision prevention systems. The designed WZDWS system is tested in these three designed scenarios. Qualitative data from survey and quantitative data from driving testing are both collected for assessing the safety benefits of the proposed VII based work zone collision prevention systems. The results of this research indicate that VII technology has the potential to reduce the safety risks at work zones under certain conditions.

Research Spin-Off Opportunities

The following are examples of how a modest SWUTC research effort can spearhead early investigations that draw interest from other sponsors for a more focused, larger piece of work to be undertaken.

Physically-based Model for Predicting the Susceptibility of Asphalt Pavements to Moisture Induced Damage

SWUTC Project #476660-00012/P.I. Eyad Masad and Rashid Abu Al-Rub

This SWUTC study conducted by **Drs. Eyad Masad and Rashid Abu Al-Rub** at Texas A&M University resulted in the development of a computer program that can predict the cohesive and adhesive failures in asphaltic materials due to the presence of moisture. This program can also be used in effectively predicting the viscoelastic, inelastic, and damage behavior of pavements under various loading conditions. *The research findings from this study directly resulted in the team obtaining an additional \$1 million award from the 2nd Cycle of the Qatar National Research Funding program.*

SWUTC Education Outreach Programs

P.I. Debbie Jasek

As a result of her numerous SWUTC sponsored educational outreach programs and the experience gained from them, Ms. Debbie Jasek of Texas A&M University was awarded this year a \$455,500 interagency contract from the Texas Department of Transportation (TxDOT) to partner with the Texas Engineering Extension Service (TEEX) to create a statewide on-the-job training and supportive service program for Texas. This program will focus on reaching women, minorities, and the disadvantaged for participation. The Texas Construction Career Academy (CCA) is envisioned to be a two to three week program that will provide training, employment opportunities and supportive services to those individuals interested in entering the highway construction workforce.

SWUTC Colleagues Recognized for Research Contributions



Dr. Tim Lomax, SWUTC Associate Director for Research at Texas A&M University, was awarded the *Regents Fellow Service Award* which is presented to those Texas A&M System employees “who have provided exemplary professional service to society that has created large and lasting benefits to Texas and beyond.” This award is the Texas A&M University System Board of Regents’ highest honor. Lomax was presented this award during ceremonies held December 4, 2008.

Dr. Lomax’s work on TTI’s *Urban Mobility Report*, and especially the public understanding of congestion as a result, was the key factor in his selection.

Dr. Lomax has also been selected as the 2009 recipient of the *Theodore M. Matson Award*. This Institute of Transportation Engineers (ITE) award honors outstanding contributions in the field of traffic engineering. The *Matson Award*, was presented at ITE’s Annual Meeting in San Antonio in August, has been awarded since 1957. Matson contributed greatly to the common welfare through the advancement of the techniques of traffic engineering. This Institute of Transportation Engineers (ITE) award honors outstanding contributions in the field of traffic engineering.



On April 23rd, **Dr. Eyad Masad**, SWUTC Executive Committee Member and researcher received the *Halliburton Professorship Award* from the Dwight Look College of Engineering at Texas A&M University. This award specifically honors those that excel in both research and teaching.

Dr. Masad, who is a faculty member of Texas A&M University at Qatar, will receive a plaque and a \$2,500 award.



Dr. Travis Waller and his former PhD student, **Jennifer Duthie**, both from the University of Texas at Austin, received the *Fred Burggraf Award* for excellence in transportation research at the Transportation Research Board’s January 2009 meeting in Washington, D.C. They were recognized for their paper titled “Incorporating Environmental Justice Measures into Equilibrium-Based Network Design,” which is a product from their SWUTC research effort by the same title.

The *Fred Burggraf Award* was established in 1966 to stimulate and encourage young researchers to contribute to the advancement of knowledge in the field of transportation. It provides recognition of excellence in transportation research by researchers 35 years of age or younger whose papers have been published under the sponsorship of any TRB Division A Standing Group.



Dr. Rashid Abu Al-Rub, SWUTC researcher and assistant professor of structural engineering at Texas A&M University, received on March 6th a Texas A&M University System *Student Led Award for Teaching Excellence* (SLATE). This student-selected honors program created by the Texas A&M University System comes with a monetary stipend and is presented annually to distinguished faculty members.



Dr. Zachary Grasley, SWUTC researcher and assistant professor of materials engineering in the Zachry Department of Civil Engineering at Texas A&M University, has received the National Science Foundation's (NSF) prestigious *Faculty Early Career Development (CAREER) Award*. Grasley's CAREER-funded project will focus on improving concrete materials, and the five year award period will begin in September, 2009.

The NSF established the *CAREER* program to support junior faculty members within the context of their overall career development, combining in a single program the support of research and education of the highest quality. Through this program, the NSF emphasizes the importance on the early development of academic careers dedicated to stimulating the discovery process in which the excitement of research is enhanced by inspired teaching and enthusiastic learning.



SWUTC Associate Director of the Transportation Scholars Program at Texas A&M University, **Dr. Gene Hawkins**, received national recognition for his work on the Federal Highway Administration's (FHWA's) Retroreflectivity Team. He, along with fellow TTI researcher Dr. Paul Carlson, were the recipients of the *Secretary's Transportation Safety Award* granted by USDOT "in recognition of outstanding dedication and commitment toward improving the safety and visibility of America's highways."

SWUTC Student Researcher Achievements



Dr. Abdul Rawoof Pinjari is a recent graduate from the University of Texas at Austin and former SWUTC student researcher under the guidance of Dr. Chandra Bhat. Pinjari was the 2008 recipient of the *Charley V. Wootan Memorial Award* from CUTC for the best PhD dissertation in North America in the field of transportation policy and planning. Pinjari received a monetary award of \$2,000 for his dissertation titled "Modeling Residential Self-Selection in Activity-Travel Behavior Models: Integrated Models of Multi-dimensional Choice Processes."

Dr. Pinjari is currently an Assistant Professor at the University of South Florida in Tampa in the Department of Civil and Environmental Engineering.



Mr. Xiugang Li, PhD student in the Zachry Department of Civil Engineering at Texas A&M University studying under the guidance of Dr. Luca Quadrigoglio, was awarded the *AFS Distinguished Graduate Student Award* on March 25th of this year. Mr. Li's award is based on research conducted through the SWUTC.



PhD student, **Naveen Eluru** from the University of Texas, supervised by Dr. Chandra Bhat, was chosen to participate in the 2009 International Road Federation Executive Leadership program, held in Washington DC during January 7-17, 2009. This annual event brings the current class of Fellows together to spend ten days: (i) learning about the IRF, (ii) being introduced to IRF members who can help to shape their careers and gain exposure to many of the public and private organizations that are active in the road industry, and (iii) hearing first hand from top-level executives what it takes to become leaders who will make a difference in the road industry.



Tara Ramani, masters student in the Zachry Department of Civil Engineering at Texas A&M University and SWUTC researcher under the guidance of Dr. Joe Zietsman, received the Association of Former Students and Office of Graduate Studies *2008-2009 Excellence in Master's Research Award* on March 25th.



Former SWUTC researcher, **Dr. Jennifer Duthie**, along with co-author Dr. S. Travis Waller (her faculty supervisor) received the *2009 TRB Fred Burggraf Award* for the paper entitled "Incorporating Environmental Justice Measures into Equilibrium-Based Network Design". This award is given annually by the Transportation Research Board for excellence in transportation research by researchers 35 years of age or younger whose papers have been published under the sponsorship of any Division A Standing Group.



PhD student, **Mr. Stephen Boyles** from the University of Texas at Austin, supervised by Dr. Travis Waller, was awarded an ITS Texas scholarship, a University Continuing Fellowship and an Eisenhower Graduate Fellowship, partly as a result of his SWUTC research work on quantifying travel time variability in transportation networks.

Technology Transfer



Current information, timely delivered to the right people is the desired outcome for the SWUTC's technology transfer program. Both educational and research program activities pursue vital aspects of technology transfer. Educationally, the student/professor relationships are the principal loci of technology transfer activities -- knowledge exchanged between professor and students in classroom and research endeavors. In the research program, technology transfer outcomes are typically associated with the delivery of research products (papers, lectures, presentations, reports, video/media) -- from individual research projects --- to potential and interested users and colleagues. During 2009, the SWUTC researchers made 33 presentations at professional meetings and published 18 journal articles based on SWUTC research. The SWUTC maintains a website at <http://swutc.tamu.edu> that presents overviews all SWUTC research and educational activities. Technical reports generated by SWUTC research projects may be downloaded at <http://swutc.tamu.edu/publications.htm>.

Selected Technology Transfer Highlights

SWUTC Conducts Bio-Fuels for Texas Forum

SWUTC Project #167370/P.I. Sharon Boxill



Forum Panelists Discuss Issues Surrounding the Use of Biofuels in Texas Transportation

SWUTC Principal Investigator **Ms. Sharon Boxill** from Texas Southern University facilitated the *Bio-Fuels for Texas Forum* held April 3rd on the TSU campus. The objective of this forum was to discuss the facts concerning the use of biofuels in Texas transportation and state the case for biofuels objectively.

Panelists for the forum were Dick Auld from Texas Tech University who spoke on the genetic manipulation of crops needed for production of biofuels; Elena Craft, Environmental Defense Fund Air Quality Specialist who focused on the health effects associated with diesel pollution; Robert Harris from the Houston Advanced Research Center who discussed issues concerning biofuels, food security and climate and William Swann of the Electric Car Club of Houston who discussed electricity as a fuel alternative.

Researcher Discusses SWUTC Work at Panel Session

Because of her SWUTC research experience on engaging low-income and minorities at the decision making table, **Ms. Gwen Goodwin** of Texas Southern University was asked to be a panel member at the February 2009 meeting of the National Association of African American Studies in Baton Rouge, Louisiana. Increasingly, citizens complain that they are unaware of projects that could significantly impact their neighborhoods. In past years, government entities have placed road widenings on their Capital Improvements Plan (CIP) and informed the public via an informational flyer regarding future projects. Years may go by without additional information coming forth from the agency. Frequently, it is not until the project is close to being constructed that the public becomes aware of what is happening. During the session, she highlighted the best practices to actively involve the public, especially low-income, limited

English, and other minority communities, in public meetings and other public sector activities. Examples of public involvement in Texas during the 2006 Regional Coordination Transportation Planning Process were examined. In addition, innovative practices by other states in the country were highlighted.

Region 6 UTCs Hold Meeting

The first annual meeting of the UTCs operating in Region 6 took place March 28th on the campus of the University of New Orleans. **Dr. John Renne** (UNO) and **Dr. Brian Wolhson** (LSU-Baton Rouge) of The Gulf Coast Research Center for Evacuation and Transportation Resiliency hosted the gathering designed to update participants on the recent and near-term activities underway at each of the Region 6 UTCs. **Dr. Herbert Richardson**, chairman of the Executive Committee of the Southwest Region University Transportation Center, welcomed individuals from the separate UTCs in the region (the University Transportation Center for Mobility at Texas A&M University, the Oklahoma Transportation Center at Oklahoma State University, the Southwest Region University Transportation Center at Texas A&M University and Mack Blackwell National Rural Transportation Center at the University of Arkansas) and USDOT representatives from the Washington office of RITA's UTC program grant administrators **Ms. Amy Stearns** and **Ms. Robin Kline**.



Region 6 UTC Personnel Gather to Discuss Collaborative Opportunities

After program overviews by each UTC, participants engaged in a free-ranging discussion of future opportunities for collaborating on educational and/or research initiatives generated several possibilities for student-based seminars and jointly-sponsored research projects. Attendees agreed to pursue some ideas for developing a research paper competition for the students at the UTC universities in Region 6 and to conduct periodic meetings and share ideas regarding feasible collaborations in the future.

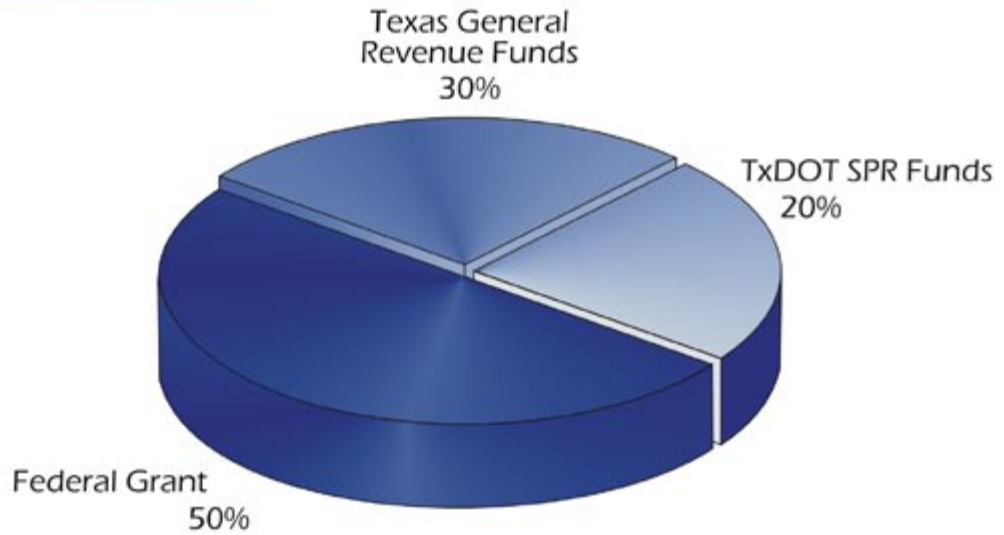
The first collaboration occurred following the meeting when **Dr. Carol Lewis** from the SWUTC was appointed to serve on the planning committee for an upcoming LSU/UNO conference titled *National Conference on Evacuation and Resiliency*. The conference will have two tracks: regional planning, transit and accommodating specific needs, and evacuation modeling. The conference goal is to bring personnel in the fields of transportation and emergency management together to discuss evacuation planning and creating resilient systems to accommodate the needs of all people before, during and after a major disaster.

SWUTC Project Produces Significant Technology Transfer

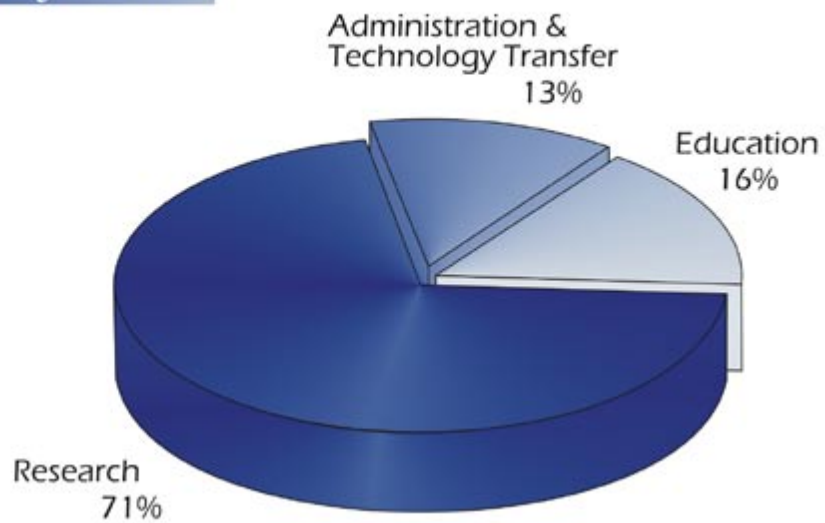
SWUTC Project #473700-00097/P.I. David Ellis

Dr. David Ellis, SWUTC researcher at the Texas Transportation Institute attracted media attention with the results of his study examining the effect of fuel prices on vehicle miles traveled and mode choice. He was interviewed by several newspapers (*USA Today*, and the *Atlanta Journal Constitution* among others). His findings have been included in presentations made to the Texas Transportation Commission as well as the 11th Annual Transportation Summit held in Dallas, Texas in August, 2009. The findings have also been incorporated into an analytical module to the TRENDS model (The TRENDS model is a revenue and expense forecasting model developed by TTI for the Texas Department of Transportation and Texas MPOs and has become the baseline long-term financial forecasting tool for the agency.) Finally, the analytical process employed in his study as well as a discussion of the results have been incorporated into PLAN 676, *Transportation Investment Decisions*, a graduate course in the Department of Landscape Architecture and Urban Planning at Texas A&M University.

Funding Sources



Expenditures of Funds





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