

## Program Progress Performance Report

Submitted to: USDOT – Research and Innovative Technology Administration

Federal Grant: #DTRT12-G-UTC06

Project Title: Southwest Region University Transportation Center

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Recipient Organization: Texas Transportation Institute, Texas A&M University System, 3135 TAMU, College Station, TX 77843-3135

Recipient Identifying Number: 600451

Grant Period: January 1, 2012 – December 30, 2013

Reporting Period End Date: June 30, 2012

Report Term: January 1, 2012 – June 30, 2012



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Dock Burke - Director

## 1. Accomplishments:

SWUTC Goals as stated in *SWUTC Prospectus* – to produce research, education and workforce development and technology transfer initiatives that serve the needs of Region 6 and support the five strategic goals of the USDOT.

### SWUTC Goal #1: Research Program

Target dates listed in *Prospectus* for program activities:

Call for Problem Statements – Target Date: February 2012 – 100% complete – Call was issued January 31, 2012.

Review Problem Statements and Select Projects for Funding – Target Date: Early March 2012 – 80% complete.

100% of TTI projects selected on March 2, 2012. Total number of projects: 14

100% of UT-Austin projects selected on March 26, 2012. Total number of projects: 14

50% of TSU projects selected on March 26, 2012. Total number of projects: 2

20% of CETR projects selected on May 1, 2012. Total number of projects: 1

Proposals Finalized and Projects Activated – Target Date: April 2012.

TAMU State of Texas-General Revenue projects activated April 1, 2012

TAMU USDOT projects activated May 1, 2012

UT-Austin State of Texas-General Revenue projects activated April 1, 2012

UT-Austin USDOT projects activated May 1, 2012

TSU State of Texas-General Revenue Projects activated April 1, 2012

TSU Federal Funded Projects not yet activated.

CETR Federal Funded Projects not yet activated.

Research program progressing as scheduled. Some research efforts have deferred their initiation date to September 1, 2012 to better coincide with the standard university fiscal year. See SWUTC website for complete listing of newly funded projects. <http://swutc.tamu.edu/researchnew.htm>

**Research Results Disseminated:** Nothing to report.

**Plans for Next Reporting Period to Accomplish Research Goal:** Have all SWUTC research efforts identified, initiated and underway. Provide support, guidance and assistance to project Principal Investigators so individual research project objectives can be achieved.

### SWUTC Goal #2: Education and Workforce Development Programs

SWUTC **graduate scholarship programs** continue uninterrupted from old grant to new grant. The SWUTC continues to support graduate programs. The ultimate goal of the SWUTC graduate program is to prepare a highly qualified cadre of new professionals into transportation science. These programs 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, and write proposals and reports. Students also participate in technical tours and professional meetings throughout the year.

Current Status:

Transportation Scholars Program at Texas A&M University - Number of students currently in program: 8 (full tuition, fees and stipend support)

Advanced Institute at the University of Texas at Austin – Number of students currently in program: 15 (receiving full tuition, fees and stipend support) 16 (just tuition and fees)

Graduate Stipend Program at Texas Southern University – Number of students currently in program: 3 (receiving stipend support)

**Summer Undergraduate Fellows Programs**

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 Programs recruit 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 graduate students, faculty members, and researchers and are also exposed to research through meetings with project sponsors and weekly research seminars. 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.

Current Status:

Undergraduate Transportation Scholars Program at Texas A&M University. Students selected to attend program on April 29, 2012. Program initiated May 29<sup>th</sup>. Program concludes August 3, 2012. Number of students in program: 2

Undergraduate Summer Internship in Transportation (USIT) at the University of Texas at Austin. Students selected to attend program April 6, 2012. Program initiated May 29, 2012. Program concludes August 10, 2012. Number of students in program: 10

**Ph.D. Candidate Assistantship Program** at Texas A&M University:

This competitive program selects Ph.D. candidates for a maximum of 12 months of salary support while dissertation is being completed. No tuition or fees are paid. Candidates are chosen based on the quality and value of the proposed research. The goal of this program is to expedite the progress of students to complete doctoral requirements and begin their careers as transportation leaders.

Current Status:

Phase I: Proposals from PhD candidates received – April 18, 2012. Proposals selected for further consideration completed May 31, 2012. Six proposals were selected. Those students with proposals selected in Phase I must submit fully developed PhD research proposals for Phase II of the selection process. This activity is currently underway.

**Development of new planning course** at UT-Austin initiated.

This new six hour course, a practicum, will be in the Community and Regional Planning Program at the University of Texas at Austin and will focus on freight planning. It will educate students on the conflicts and barriers between freight and other land uses particularly on a megaregional scale. By exposing students to a series of readings, discussions, interviews, and a

research/design project at the megaregional scale, students will gain a real world application of designing freight compatible communities.

**Rural Summer Transportation Institute – Kingsville –**

The Summer Transportation Institute (STI) at Texas A&M University-Kingsville (TAMUK) has been jointly hosted by the Texas Transportation Institute (TTI), SWUTC and TAMUK since 2004. A large number of students that have participated in past programs have continued their education and majored in engineering and science. This program is the only one of its type in south Texas. The activities selected for this one week program emphasize math, technology, and science and allowed students the opportunity to work individually and as part of teams. STI also incorporates a module regarding transportation career opportunities. New for this year, the program will introduce an energy sustainability module to the students.

**Current Status:**

20 students identified to participate in the program on July 23<sup>rd</sup> – July 27<sup>th</sup>. Supplies have been purchased for program.

**Transportation and Security Institute (TSI): Recruiting Next Generation Professionals at Texas Southern University**

This program focuses on the mission and objectives of transportation security professionals and introduces a pre-selected group of high school students to the various career opportunities within the profession of transportation security. The objective of the TSI is to provide the framework that would expose high school students to the transportation security industry via hands-on technical activities, field trips to transportation facilities, lectures by transportation professionals, and on site seminars. Industry professionals will reinforce the importance of mathematics, science, and technology skills. Students will also observe how public/private partnerships work to strengthen the link between today's students and future transportation security needs.

**Current Status:**

This program was conducted June 18- 29, 2012. 19 high school students (10 male, 9 female) attended the two-week non-residential program on the campus of TSU. In addition to highlighting the challenges faced by transportation security personnel, the curriculum also addressed the four principal modes of transportation (air, land, rail, and water) with activities led by transportation and academic professionals whose fields of interests included the following: transit operations, entrepreneurship, commercial aviation, maritime security, geographic information systems, urban transportation history, and STEM-related careers. Student participated in field trips to Houston METRO light rail facilities, and the offices of the Houston Galveston Area Council (HGAC) and NASA. Also included were guest lecturers from Port of Houston, Texas Green Energy, HGAC, DHS, and TxDOT.

**Education Results Disseminated:** Nothing to report for this period.

**Plans for Next Reporting Period to Accomplish Education Goal:**

Complete TAMU and UT-Austin summer undergraduate fellows programs.  
Conduct Rural Summer Transportation Institute – Kingsville on July 23<sup>rd</sup> – 27<sup>th</sup>.

SWUTC Goal #3: Technology Transfer

**SWUTC Website**

SWUTC website has been updated with new information concerning new active research projects, personnel directory listings and recently published final technical reports. A new SWUTC website is currently under development and is due to go live by August 31, 2012. This new website will have an extensive “Current SWUTC News” section to highlight center activities and accomplishments replacing the pervious paper version center newsletter.

**Plans for Next Reporting Period to Accomplish Technology Transfer Goal:**

Complete SWUTC website redesign and have new site live.

**2. Products:**

Publications/papers/presentations:

Presentation: Traffic: Costs, Timing and Changing Tools, Tim Lomax, Texas A&M University, presented to SMC3, Chicago, June 26-19, 2012.

Websites: Nothing to report at this time.

Technologies or techniques: Nothing to report at this time.

Inventions/patent applications/licenses: Nothing to report at this time.

Other Products: Nothing to report at this time.

**3. Participants & Other Collaborating Organizations**

Individuals who have worked on the SWUTC Program during this reporting period:

Name:	Edith Arambula
Program/Project Role:	Associate Research Engineer – Research Staff
Number of hours worked:	17
Contribution to Project:	Performed work in terms of reviewing existing mixture data and gathering relevant literature.
Funding Support:	State of Texas – General Revenue
Collaborated with individual in foreign country?:	No

Name:	Jennifer Barry
Program/Project Role:	Sr. Office Associate – Support Staff
Number of hours worked:	14
Contribution to Project:	Assisted with the development of the mailing list for conference announcement.
Funding Support:	State of Texas – General Revenue
Collaborated with individual in foreign country?:	No

Name:	Stacey Bricka
Program/Project Role:	Research Scientist – Project Principal Investigator
Number of hours worked:	16
Contribution to Project:	Led project, including project panel, internal technical and logistics team, set schedule and implemented tasks.
Funding Support:	State of Texas – General Revenue
Collaborated with individual in foreign country?:	No

Name:	Dock Burke
Program/Project Role:	Senior Research Scientist – SWUTC Director
Number of hours worked:	522
Contribution to Project:	Serves as Chief Executive Officer of the Center.
Funding Support:	State of Texas – General Revenue
Collaborated with individual in foreign country?:	No

Name:	Mark Burris
Program/Project Role:	Assoc. Research Engineer – Research Staff
Number of hours worked:	19
Contribution to Project:	Drafted and reviewed background and literature review section of report.
Funding Support:	State of Texas – General Revenue
Collaborated with individual in foreign country?:	No

Name:	Seth Cole
Program/Project Role:	Student Technician – Research Staff
Number of hours worked:	142
Contribution to Project:	Assisted in literature review, IRB protocol application and the draft survey development.
Funding Support:	State of Texas – General Revenue
Collaborated with individual in foreign country?:	No

Name:	Bonnie Duke
Program/Project Role:	Administrative Coordinator – Support Staff
Number of hours worked:	70
Contribution to Project:	Typing methodology and preparing portions of the report for the report website.
Funding Support:	State of Texas – General Revenue
Collaborated with individual in foreign country?:	No

Name:	William Eisele
Program/Project Role:	Research Engineer – Project Principal Investigator
Number of hours worked:	35
Contribution to Project:	Traveled to meet with researchers at USF/CFIRE in Tampa, FL to discuss transit methodology potential changes to the Urban Mobility Report (UMR). Travel to Seattle, WA to meet with UW researchers to discuss data and potential improvements to the truck methodology of UMR.
Funding Support:	State of Texas – General Revenue
Collaborated with individual in foreign country?:	No

Name:	Heather Ford
Program/Project Role:	Program Coordinator – Support Staff
Number of hours worked:	18
Contribution to Project:	Assisted with logistical details, editing documents and providing project support, communicated with IRB regarding short survey on key issues for symposium.
Funding Support:	State of Texas – General Revenue
Collaborated with individual in foreign country?:	No

Name:	Tina Geiselbrecht
Program/Project Role:	Assistant Research Scientist – Project Principal Investigator
Number of hours worked:	8
Contribution to Project:	Reviewed the literature on sustainability and Mileage-Based User Fees (MBUF) to develop potential scenarios for further investigation in later stages of the project.
Funding Support:	State of Texas – General Revenue
Collaborated with individual in foreign country?:	No

Name:	Tao Geng
Program/Project Role:	Systems Analyst – Research Staff
Number of hours worked:	418
Contribution to Project:	Data preparation work. Conflating the FHWA HPMS GIS network with the INREX speed GIS network so that calculations can be run for all US urban areas.
Funding Support:	State of Texas – General Revenue
Collaborated with individual in foreign country?:	No

Name:	Timothy Lai
Program/Project Role:	Research Associate – Research Staff
Number of hours worked:	34
Contribution to Project:	Performed data entry and researched local designated driving solutions.
Funding Support:	State of Texas – General Revenue
Collaborated with individual in foreign country?:	No

Name:	Sunghoon Lee
Program/Project Role:	Graduate Research Associate – Research Staff
Number of hours worked:	261
Contribution to Project:	Reviewed literature on sustainability and Mileage-Based User Fees (MBUF) to develop potential scenarios for further investigation in later stages of the project. Also drafted background and literature review section of final report.
Funding Support:	State of Texas – General Revenue
Collaborated with individual in foreign country?:	No

Name:	Tim Lomax
Program/Project Role:	Senior Research Engineer – Research Staff
Number of hours worked:	26
Contribution to Project:	Reviewing preliminary results and doing early preparation work on the Urban Mobility Report.
Funding Support:	State of Texas – General Revenue
Collaborated with individual in foreign country?:	No

Name:	Barbara Lorenz
Program/Project Role:	Program Coordinator – SWUTC Program Manager
Number of hours worked:	522
Contribution to Project:	Assists SWUTC Director in all aspects of management, and oversees daily operational activities of the Center.
Funding Support:	State of Texas – General Revenue
Collaborated with individual in foreign country?:	No

Name:	Jesse Ortega
Program/Project Role:	Research Assistant – Research Staff
Number of hours worked:	194
Contribution to Project:	Assisted in literature review, IRB protocol application and the draft survey development.
Funding Support:	State of Texas – General Revenue
Collaborated with individual in foreign country?:	No

Name:	Meghana Padigala
Program/Project Role:	Graduate Assistant Research – Research Staff
Number of hours worked:	87
Contribution to Project:	Performed work in terms of acquiring materials for specimen fabrication, reviewing existing mixture data, and gathering relevant literature.
Funding Support:	State of Texas – General Revenue
Collaborated with individual in foreign country?:	No



Name:	Eun S. Park
Program/Project Role:	Research Scientist – Research Staff
Number of hours worked:	44
Contribution to Project:	Performed statistical analysis to model the cost-benefit relationship between contractor’s additional cost of acceleration and total savings to the agency.
Funding Support:	State of Texas – General Revenue
Collaborated with individual in foreign country?:	No

Name:	David Schrank
Program/Project Role:	Associate Research Scientist – Research Staff & Principal Investigator
Number of hours worked:	Project #1: 158, Project #2: 34
Contribution to Project:	Project #1: Reviewing preliminary results and doing early preparation work on the Urban Mobility Report. Project #2: Traveled to meet with researchers at USF/CFIRE in Tampa, FL to discuss transit methodology potential changes to the Urban Mobility Report (UMR). Traveled to Minneapolis, MN to meet with the Project Monitor at the beginning of the project.
Funding Support:	State of Texas – General Revenue
Collaborated with individual in foreign country?:	No

Name:	Piyush Sharma
Program/Project Role:	Graduate Assistant Research – Research Staff
Number of hours worked:	89
Contribution to Project:	Worked on data collection and initial analysis, sourced from real-world highway rehabilitation projects.
Funding Support:	State of Texas – General Revenue
Collaborated with individual in foreign country?:	No

Name:	Jian Shen
Program/Project Role:	Graduate Assistant Research – Research Staff
Number of hours worked:	365
Contribution to Project:	Data preparation work. Conflating the FHWA HPMS GIS network with the INREX speed GIS network so that calculations can be run for all US urban areas.
Funding Support:	State of Texas – General Revenue
Collaborated with individual in foreign country?:	No

Name:	Christopher Simek
Program/Project Role:	Research Specialist – Research Staff
Number of hours worked:	21
Contribution to Project:	Led logistics aspects of project, including coordination with TTI-Event Management and Planning, overseeing support staff work, call for posters, and web-applications to support call for posters and web survey.
Funding Support:	State of Texas – General Revenue
Collaborated with individual in foreign country?:	No

Name:	Sangeetha Sunkari
Program/Project Role:	Programmer/Analyst – Research Staff
Number of hours worked:	172
Contribution to Project:	Data preparation work. Conflating the FHWA HPMS GIS network with the INREX speed GIS network so that calculations can be run for all US urban areas.
Funding Support:	State of Texas – General Revenue
Collaborated with individual in foreign country?:	No

Name:	Stacey Tisdale
Program/Project Role:	Senior Web Apps. Developer – Project Principal Investigator
Number of hours worked:	70
Contribution to Project:	Initiated development of social media set-up and messaging, website development, graphic design, gaining human study research approval, and communicating with prospect study schools.
Funding Support:	State of Texas – General Revenue
Collaborated with individual in foreign country?:	No

Name:	Christine Yager
Program/Project Role:	Associate Transportation Researcher – Project Principal Investigator
Number of hours worked:	17
Contribution to Project:	Prepared final version of literature review, IRB protocol application and the draft survey development. Also managed project budget and schedule.
Funding Support:	State of Texas – General Revenue
Collaborated with individual in foreign country?:	No

Name:	Xiaosi Zeng
Program/Project Role:	Graduate Assistant Research – Research Staff
Number of hours worked:	131
Contribution to Project:	Performed literature review related to transit signal priority algorithms, traffic signal control, and connected vehicles.
Funding Support:	State of Texas – General Revenue
Collaborated with individual in foreign country?:	No

Name:	Yuqin Zhang
Program/Project Role:	Graduate Assistant Research – Project Principal Investigator
Number of hours worked:	87
Contribution to Project:	Conducted extensive literature review to summarize existing mechanistic models for the characterization of the permanent deformation and cracking in asphalt concrete.
Funding Support:	State of Texas – General Revenue
Collaborated with individual in foreign country?:	No

Name:	Yunlong Zhang
Program/Project Role:	Associate Research Engineer – Project Principal Investigator
Number of hours worked:	174
Contribution to Project:	Conducted literature review, investigated data format and availability, and explored potential candidate methods for developing optimized timing plan.
Funding Support:	State of Texas – General Revenue
Collaborated with individual in foreign country?:	No

Other Organizations as SWUTC Partners:

The following organizations provide personnel to serve as project monitors for SWUTC research projects. The responsibilities of a Project Monitor are to 1) maintain contact with the P.I. throughout the life of the project, 2) evaluate the progress of the research activities, 3) provide guidance to the P.I. to ensure that the research will produce usable results, and 4) review the reports emanating from the project.

California Legislative Analyst’s Office – Contribution: In-kind support  
Maryland State Highway Administration - Contribution: In-kind support  
Heldenfels Enterprises, Inc. - Contribution: In-kind support  
Rutgers University - Contribution: In-kind support  
Precision Driving Research - Contribution: In-kind support  
Michigan State University - Contribution: In-kind support  
Minnesota DOT – Metro Division - Contribution: In-kind support  
Dallas Area Rapid Transit - Contribution: In-kind support  
Texas Department of Transportation-San Antonio District - Contribution: In-kind support  
Texas Department of Transportation-Dallas District - Contribution: In-kind support  
Texas Department of Transportation-Austin District - Contribution: In-kind support  
George Washington University – School of Business - Contribution: In-kind support  
Federal Highway Administration - Contribution: In-kind support  
Washington State Department of Transportation - Contribution: In-kind support  
Prairie View A&M University – Department of CE - Contribution: In-kind support  
Port of Houston Authority - Contribution: In-kind support  
Houston Metropolitan Transit Authority - Contribution: In-kind support  
Traffic Engineers Inc. - Contribution: In-kind support  
University of Nebraska-Lincoln – Dept. of CE - Contribution: In-kind support  
RAND Corporation - Contribution: In-kind support  
Energy Institute – UT-Austin - Contribution: In-kind support

Capital Area Metropolitan Planning Organization (Austin) - Contribution: In-kind support and exchange of personnel.  
University of CA-Berkeley – Dept. of CE - Contribution: In-kind support  
City of Austin-Public Works Department - Contribution: In-kind support  
Applied Research Associates, Inc. - Contribution: In-kind support  
Cintra US - Contribution: In-kind support and exchange of personnel.  
NSF RCNetwork – Contribution: Exchange of personnel

The following organizations provided personnel and facilities for SWUTC K-12 educational programs held during this reporting period.

Texas A&M Kingsville - Contribution: In-kind support  
Houston Galveston Area Council - Contribution: In-kind support  
NASA - Contribution: In-kind support  
Port of Houston - Contribution: In-kind support  
Texas Green Energy - Contribution: In-kind support  
Texas Department of Transportation - Contribution: In-kind support  
Houston METRO - Contribution: In-kind support

#### **4. Impact**

Impact on the development of the principal disciplines of the program: Nothing to report.

Impact on other disciplines: Nothing to report.

Impact on the transportation workforce development: Nothing to report.

Impact on physical, institutional, and information resources at the university or other partner institutions: Nothing to report.

Impact of technology transfer: Nothing to report.

Impact on society beyond science and technology: Nothing to report.

#### **5. Changes/Problems**

Nothing to report