Since becoming a university transportation center of the U.S. Department of Transportation in 1999, The University Transportation Center for Alabama (UTCA) has conducted transportation education, research, and technology transfer activities throughout the state and region. Faculty and students at The University of Alabama (UA), The University of Alabama at Birmingham (UAB), and The University of Alabama in Huntsville (UAH) have participated in all of these service areas.

Our mission reflects the mission of the U.S. Department of Transportation. Specifically, the UTCA seeks to advance technology and expertise in the multiple disciplines that comprise transportation through the mechanisms of education, research, and technology transfer while serving as a university-based center of excellence (2006 UTCA Strategic Plan, p. 12).

Our theme – Management and Safety of Transportation Systems – reflects the transportation needs of Alabama and the expertise of The University of Alabama System faculty. In 2007 the Executive Committee narrowed and sharpened the focus of the UTCA research program. Many management research projects now focus on maximizing traffic management and minimizing congestion. Similarly, some new safety research projects highlight infrastructure sustainability.

The UTCA has an impressive history of research excellence and successful educational outreach. To facilitate more interdisciplinary research, UTCA headquarters moved to Bevill Hall at the end of the summer. Our new offices adjoin those of the Aging Infrastructure Systems Center of Excellence (AISCE), and we look forward to renewed collaboration with this research partner.

We are also delighted with the popularity of a new educational outreach program. Participants in the ATI-Div-09 were middle and high school student members of The University of Alabama-Tuscaloosa, National Society of Black Engineers, Jr. Chapter. UTCA welcomes the opportunity to partner with this prestigious organization in “spreading the word” about careers in transportation engineering. For more information about this program, please refer to page 4.

Sincerely,

Jay K. Lindly
United States Code requires that at least 15% of the transit funds supplied by the federal government to a state be spent on a program that supports intercity bus transportation. If the state’s governor finds intercity bus needs are being adequately met, the governor can apply those funds to other transit projects. The objective of this study was to provide the Alabama Department of Transportation (ALDOT) with an evaluation of Alabama’s intercity bus service to aid the Governor in making that decision.

Dr. Lindly and the research team examined the state of intercity bus service in Alabama by collecting and evaluating relevant information from such groups as the Alabama Public Service Commission, ALDOT personnel, intercity bus service providers, rural transit providers, and national groups on the forefront of intercity bus service. Opportunities for new or enhanced services were identified, and facilities and bus stops were evaluated. The investigation revealed several interesting facts. First of all, the number of intercity bus stops in Alabama has declined from 81 in 2001 to 13 in 2008. Additionally, in 2001, only 17% of the state was not within a 20-mile radius of a bus station, but by 2008, more than 60% of the state lies more than 20 miles from a bus station. (See figure.) Consequently, sizeable cities do not receive intercity bus service.

After evaluating the data, the research team made the following observations considering the state of Alabama’s intercity bus service:

- The intercity bus needs in Alabama are not being met, and federal funds should be made available for activities to support intercity bus service.
- Intercity bus funds in Alabama may be used most effectively to promote the following activities listed in order of priority:
  - Planning and marketing for intercity bus transportation
  - Feeder routes to connect with existing intercity bus service
  - Over-the-road coaches for private providers
  - Operating subsidies to private providers that provide restored intercity bus routes

Dr. Yingyan Lou is the new Assistant Professor of Transportation Engineering in the Department of Civil, Construction, and Environmental Engineering at The University of Alabama. Her broad research interests are transportation systems modeling and optimization, traffic flow theory, and traffic operations. Dr. Lou is currently preparing a UTCA project proposal on transportation funding options in our changing driving environment. This topic was a research priority identified by UTCA Advisory Board members at its recent meeting.
Transportation Engineering Advancement and Mentoring (TEAM) Program at UAH

For the past ten years over 400 middle school students from the Huntsville area have enjoyed the summer outreach programs organized by Dr. Kate Leonard from The University of Alabama in Huntsville (UAH). This year Dr. Leonard and her colleagues re-designed and expanded their traditional summer program to include several visits to middle school science classes. The goal of this new program – the Transportation Engineering Advancement and Mentoring (TEAM) Program – is to produce students who know “how to find out” and “how to examine and evaluate evidence.”

Mentors (engineering students and professional engineers) began visiting selected middle school science classes in February during National Engineers’ Week. They spent valuable one-on-one time with these science students conducting hands-on activities developed in previous UTCA grant programs. These visits culminated with a Civil Engineering (CE) Bridge Competition in April. Over 60 students participated in the CE Bridge Competition. Students designed bridges using the West Point bridge computer program and then built their trusses using Popsicle sticks and hot glue. Winners of the individual competition received t-shirts, and the best classes were treated to pizza parties.

Several students from these middle schools attended a week-long program held on the UAH campus in June. Participants learned about the role of transportation planning, management, safety, and design in modern society. They also explored new alternative energy technologies.

According to Dr. Leonard, this summer’s program was very “problem oriented.” Students, using knowledge gained from lectures and experiments, attempted to solve a number of transportation problems. Civil engineering professors from UAH and local professional engineers were instructors, and they used real-world examples and new technologies in their lectures and activities.

Dr. Leonard will continue working with local school districts to incorporate transportation engineering-related topics into the science curriculum. By providing in-school mentoring and a week-long summer program, planners hope to encourage underrepresented students to consider a career in transportation engineering. These activities were funded by UTCA Project #09306.

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The eighth annual Advanced Transportation Institute (ATI-09) was held in June for rising high school juniors and seniors from the west-central region of Alabama. Forty-three students participated in this week-long event which was conducted at the Alabama Department of Transportation (ALDOT) headquarters in Montgomery, AL. Since its inception in 1999, UTCA has been committed to recruiting minority students to careers in transportation engineering. As in preceding years, ALDOT co-sponsored this important outreach event. In July a second three-day Institute (ATI-Div-09) was taught at the ALDOT 5th Division office and UTCA facilities at The University of Alabama in Tuscaloosa. ATI-Div-09 participants were middle and high school student members of the University of Alabama-Tuscaloosa, National Society of Black Engineers, Jr. Chapter (UAT-NSBE, Jr.). These Institutes were funded by UTCA Project #09108 and organized by Dr. Daniel Turner (UA).

Institute presentations, lab experiences, design competitions, and field trips were designed to give participants a general overview of ALDOT, an introduction to transportation engineering as a career, and hands-on examples and challenges. Results from comprehensive evaluations indicated students enjoyed their experiences and were influenced to consider transportation careers.

ATI’s impact was recently highlighted in an issue of The University of Alabama Capital Campaign Newsletter.

Jakkera Allen of Selma knows participating in ATI can change lives. When she attended ATI 2004, the first person she encountered was a smiling and welcoming Dr. Turner. At his encouragement, Allen, now a senior at UA, chose civil engineering as her major.

“My freshman year at The University of Alabama, I walked up to Dr. Turner. He still knew who I was, and that tells me a lot about his passion for his work,” says Allen. “Dr. Turner taught me one very important lesson: If you find a job you love, then you’ll never work a day in your life.”
UTCA Researchers and Colleagues Honored at CCEE Awards Banquet

On April 7, 2009 the Department of Civil, Construction, and Environmental Engineering at UA held its annual Honors and Awards Banquet. Several UTCA researchers and colleagues were honored. Kirankumar (Kiran) Patel won the Josiah Gorgas Award for Outstanding Civil, Construction, and Environmental Senior. As a student research assistant at UTCA, Kiran worked on UTCA Project #07407 – Pilot Study: School Bus Seat Belts and UTCA Project #09108 – Advanced Transportation Institute 2009. Kiran is currently pursuing a master’s degree at UA in structural engineering.

Andrew (Drew) Waldrop received The Chi Epsilon Honor Society Student Leadership Award for his role as chapter president. He also worked on UTCA Project #07407 – Pilot Study: School Bus Seat Belts. Drew is currently an engineer with the Alabama Department of Transportation (ALDOT) in Montgomery.

Mr. George Conner, State Maintenance Engineer for the Alabama Department of Transportation (ALDOT) was inducted as a Distinguished Departmental Fellow of the Department of Civil, Construction, and Environmental Engineering. Mr. Conner is also UTCA’s newest Advisory Board member. (See page 8 for more information on Mr. Conner.)

Dr. Daniel S. Turner, founding Executive Director of UTCA, was the banquet speaker and honoree. Described as a special friend, educator, mentor, and colleague, Dr. Turner was honored several times during the evening. First, Chi Epsilon Chapter President Drew Waldrop welcomed Dr. Turner as a chapter honor member. Dr. Turner’s talents as an educator and mentor were again recognized when the UA Student Chapter of ASCE presented him with the Donald H. McLean Civil Engineering Professor of the Year Award. The highlight of the evening was the presentation of The Daniel S. and Linda C. Turner Endowed Scholarship. The scholarship award plaque states that Dr. Turner has positively influenced the lives of countless students, and through this endowed scholarship, Daniel and Linda Turner will continue to help students achieve their individual life, academic, and professional aspirations.

Dr. Turner will officially retire at the end of this semester. We are very grateful for his years of service to The University of Alabama and UTCA.
Analysis of the Effects of Aging Transportation Infrastructure on Heavy Construction Projects

This news item is a summary of a presentation by Stephanie Watson, doctoral student in the UAB Department of Civil, Construction, and Environmental Engineering. The presentation is part of the Research in Progress ONLINE Seminar Series co-sponsored by the Injury Control Research Center, UAB UTC, and UTCA. It is a summary of her PhD research proposal which outlines her intended work. Additional information on this webinar and others may be found at http://www.uab.edu/utc/Research%20in%20Progress%20Seminar%20Series.htm.

Introduction
On January 28, 2009, the American Society of Civil Engineers (ASCE) released the 2009 Report Card for America’s Infrastructure. The dismal grades announced in the updated Report Card and the new economic stimulus package have highlighted the nation’s aging transportation infrastructure. The fragility of our transportation infrastructure is quite apparent to most citizens. The purpose of this study is to quantify the effects of our aging transportation infrastructure on the heavy construction efforts in the eastern United States. This study will also investigate the possibility of a truck transport corridor as a countermeasure to the effects.

Background
The congestion and delay experienced by U.S. motorists increases each year. According to the Texas Transportation Institute (TTI), more than $63 billion of wasted time and fuel occurred in 2003 ($384 per person). From 1992 until 2002, the U.S. saw an increase in the number of heavy trucks, trucks weighing more than 26,000 pounds, of 28.5%. With this documented increase in the number of trucks on U.S. roadways, it is conceivable to believe a significant increase in the number of highway lane miles occurred. However, from 1985 until 2006, highway lane miles in the U.S. increased only 5%. According to the Bureau of Transportation Statistics, during this same period of time (1985-2006) vehicle-miles traveled in the U.S. increased nearly 100%. Heavy truck and freight traffic in the U.S. will continue to increase. U.S. highway congestion is the foundation of the need for regional truck-only lanes recommended by this research.

Research Methodology
Transportation infrastructure concerns will be studied to determine their effects on the cost of ongoing construction activities in the eastern United States. Maritime security, highway congestion and trucking weight, and dimension restrictions are a few of the concerns to be included in the impact analysis. Individuals representing the facility owners, construction managers, general contractors, major equipment manufacturers, and federal, state, and local transportation agencies will be asked to complete surveys as a means of data collection for use in the analysis. The data collected from this industry survey will be used to show additional construction costs incurred because of the aging transportation infrastructure. A cost-benefit analysis of a possible truck transport corridor and a detailed implementation plan will also be included in the final report.

Conclusion and Recommendations
During the past four years Ms. Watson has worked with Dr. Wilbur Hitchcock on two UTCA-funded projects investigating the nation’s aging transportation infrastructure (UTCA Project #05231 – Transportation Critical Infrastructure Protection (CIP) Education and UTCA Project #06211 – Emergency Reconstruction of Critical Transportation Infrastructure). This article is a summary of her dissertation proposal, and we look forward to sharing her research findings in future UTCA publications.
The UTCA Advisory Board held its annual meeting on Tuesday, July 28, 2009, in Room 320 of the Business Engineering Complex at The University of Alabama at Birmingham (UAB) campus. Dr. Jay K. Lindly, Executive Director, called the meeting to order at 11:00 AM. He welcomed Board members and introduced Mr. Steve Ostaseski, Advisory Board Chair.

This meeting marked two changes in the Board’s membership. First, Mr. George Conner, head of ALDOT’s Maintenance Bureau in Montgomery, joined the UTCA Advisory Board. Secondly, due to the demands of his restructured business interests, Mr. George Overstreet offered his resignation. For three years Mr. Overstreet represented the Alabama Trucking Association on the UTCA Advisory Board. Mr. Ostaseski recognized Mr. Overstreet’s years of service to the Advisory Board and wished him well in upcoming endeavors.

Following the adoption of the agenda and approval of prior minutes, Dr. Lindly and the three Associate Directors – Dr. Michael Hardin (UA), Dr. Fouad H. Fouad (UAB), and Dr. Houssam Toutanji (UAH) – provided an overview of the Center’s operations. This overview included the history, mission, theme, and organizational structure of UTCA. The team also highlighted recent accomplishments in UTCA’s education, technology transfer, and research programs.

Following the overview, Professors from two campuses presented brief summaries of current UTCA projects while the group enjoyed a lunch provided by UAB. Mr. Andrew Sullivan from The University of Alabama at Birmingham (UAB) shared Project #07211 – Traffic Signals and Rain-related Congestion. This project evaluated the effectiveness of using traffic responsive/closed-loop signal systems to address weather-related congestion, specifically congestion caused by rain. The project examined the environments and operating regimes under which closed-loop signal systems are most effective at reducing weather-related congestion, developed estimates of potential congestion reduction resulting from use of weather-responsive signal systems, and determined whether benefits justify implementation.

Dr. Houssam Toutanji from The University of Alabama in Huntsville (UAH) shared Project #07401 – Multimedia Package for Load and Resistance Factor Design. This project provided practical, hands-on materials for technical training necessary to transition structural design to “load and resistance factor design” (LRFD) methodology for the Alabama Department of Transportation (ALDOT) Bridge Bureau. Project #07401 was funded by ALDOT.

Following their presentations, Dr. Lindly reviewed lists of projects authorized for 2009, which included ten new projects totaling $625.7k. In 2009 UTCA also conducted projects funded by other agencies totaling $116.6k. Dr. Lindly noted that approximately $750,000.00 will be available to fund research projects for 2010.

Mr. Ostaseski and Dr. Lindly reviewed the 2009 Annual Research Plan with Board members and asked for concepts and projects that could be used to create the 2010 Annual Research Plan. The Board discussed many possible research topics including

- how transportation funding should be addressed in the future,
- the impact of hurricane evacuation strategies on emergency personnel traveling to the coastal region,
- the effects of switching to the LRFR bridge rating system, and
- the continued threat to Alabama’s highway infrastructure posed by oversize/overweight (OS/OW) vehicles.

Mr. Steve Ostaseski thanked Dr. Fouad H. Fouad and particularly Ms. Jennifer Vinson for their hospitality and congratulated the Advisory Board on a productive meeting. He adjourned the meeting at 3:00 PM. The next meeting of the UTCA Advisory Board will be in the summer of 2010.
### UTCA Advisory Board

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Tuscaloosa, AL

**County Engineer:**
Mr. Randy Cole  
Shelby County (AL) Engineer  
Columbiana, AL

**New Advisory Board Member**

Mr. George Conner is the State Maintenance Engineer for the Alabama Department of Transportation (ALDOT) in Montgomery, AL. As head of ALDOT’s Maintenance Bureau, he oversees a statewide highway maintenance program involving a mature system of over 10,000 miles of highways that handles almost 30 billion miles of travel annually. Mr. Conner earned bachelor’s and master’s degrees in civil engineering from The University of Alabama and is a licensed professional engineer in the state. He is active in many professional organizations. Mr. Conner is currently Chair of the American Association of State Highway and Transportation Officials (AASHTO) BRIDGE-Ware Task Force and a member of the Subcommittee on Bridges and Structures.

In April 2009 Mr. Conner was inducted as a Distinguished Departmental Fellow of the Department of Civil, Construction, and Environmental Engineering at his alma mater. UTCA welcomes Mr. Conner to its Advisory Board.