**Introduction to the UTCA**

Since becoming a university transportation center of the US 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 US 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. Last year 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 Director’s Notes**

This is the first newsletter the UTCA has released since I succeeded Dr. Dan Turner as Director in January. (Don’t worry: Dan is continuing his interest in and work for the UTCA at the same time that he’s addressing new challenges for The University of Alabama.) The UTCA has been fortunate to have Dan’s guidance and to have a wide network of talented, interdisciplinary faculty members from all three campuses contributing to the Center’s efforts.

The stories in this newsletter describe some of the UTCA’s accomplishments and activities during the past few months. Each story illustrates how our Center has supported USDOT’s mission to advance transportation through education, research, and technology transfer. I appreciate the work of all the individuals who contribute to our joint enterprise.

Sincerely,

Jay K. Lindly
2nd Annual Student Awards Luncheon

Students from the three campuses of The University of Alabama System are engaged in a variety of transportation-related research activities. A UTCA project (#07301) headed by Dr. Mike Anderson of The University of Alabama in Huntsville helped identify deserving transportation students and provided a forum in which they could present their research. First, students were invited to present abstracts of their research to a panel of representatives from each campus, and then top abstracts were selected.

These students were invited to present their research at the 2nd Annual Student Awards Luncheon on November 27, 2007. This awards luncheon, held at The University of Alabama at Birmingham (UAB), was organized and hosted by the Institute of Transportation Engineers (ITE) Student Chapter at UAB. Three students — Lily Wang (UA), Ozge Cavusoglu (UAB), and Heather Shar (UAH) — presented technical papers to showcase their research activities. Other students shared their research during poster sessions before and after the luncheon. All presenters received monetary awards allowing them to attend the 87th Annual Meeting of the Transportation Research Board in Washington, DC in January 2008.

2007 Student of the Year

The University Transportation Center for Alabama is proud to recognize Ms. Stephanie Watson as its 2007 Student of the Year. Stephanie is a graduate research assistant at The University of Alabama in Birmingham where she is pursuing a doctoral degree in civil engineering focusing in construction management and transportation.

She received her BS in civil engineering from Lawrence Technological University in May 2005. In May 2007 Stephanie completed her MS in civil engineering with certificates in construction management, transportation, and environmental engineering. Her master’s thesis resulted from her work on a UTCA research project on critical transportation infrastructure protection.

Stephanie’s professional activities include active membership in ASCE, SWE, ITE, and Chi Epsilon. The presentation of the Student of the Year award occurred in Washington, DC during the Transportation Research Board’s Annual Meeting. At the awards banquet Ms. Watson was able to meet Mr. Norman Mineta, former Secretary of Transportation.

Stephanie Watson and Former Secretary of Transportation Norman Mineta

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TRB’s 2008 Alabama Field Visit

Every year representatives from the Transportation Research Board (TRB) visit state departments of transportation (DOTs) to identify problems these groups are facing and to investigate how TRB can assist in solving those problems. These visits often include meetings with universities, transit organizations, and industry leaders that work with DOTs.

Mr. Stephen F. Maher, TRB’s Engineer of Design, recently completed TRB’s 2008 Alabama Field Visit. On Tuesday, April 15th, he met with Mr. Jeffery Brown and Ms. Ivy Harris of ALDOT’s Research and Development Bureau.

The next day Mr. Maher, Mr. Brown, and Ms. Harris visited the UTCA headquarters in Tuscaloosa and were welcomed by UTCA Executive Director Dr. Jay Lindly and Dr. Daniel Turner, Professor in the Department of Civil, Construction, and Environmental Engineering. During the meeting that followed, Dr. Lindly began by describing the UTCA and reviewing several research projects the UTCA conducted in collaboration with ALDOT.

UTCA had invited directors from two other UA centers that perform research for ALDOT to attend the meeting. Dr. David Hale, Associate Professor in the Department of Management Information Systems and Director of the Aging Infrastructure Systems Center of Excellence (AISCE), described research projects the AISCE had completed with ALDOT such as the UTCA Project #05404 – Executive Bridge Maintenance Management System: A Web Portal.

In this project researchers designed and deployed a state-wide bridge reporting system for ALDOT that extended the capabilities and user community for the existing Alabama Bridge Information Management System (ABIMS). The improvements greatly enhance ALDOT’s ability to identify bridge maintenance needs.

The CARE Research and Development Laboratory (CRDL) at The University of Alabama also provides valuable research assistance to ALDOT. Dr. Allen Parrish, CRDL Director and Professor in the Department of Computer Science, gave a brief overview of the history and mission of his center. The original product of CRDL was CARE (Critical Analysis Reporting Environment), a data analysis software system that has been applied primarily in the field of traffic safety.

CRDL has expanded to support ALDOT and traffic safety through the use of GIS technology. The CRDL is able to identify locations associated with large numbers of traffic crashes, particularly crashes involving injuries or fatalities. Using this data, ALDOT can modify hazardous road conditions in those areas.

Even though each organization at the meeting pursues unique research interests, they all support and extend the work of the Alabama Department of Transportation. This collaboration is essential to successfully meet the transportation challenges of the future.
Graduate Practicum I: Networking with Your Colleagues

Every semester the Department of Civil, Construction, and Environmental Engineering at The University of Alabama hosts seminars as part of the graduate practicum. The UTCA hosted the first seminar of the semester, Networking with Your Colleagues in Transportation, on January 25, 2008 in Shelby Hall. Over 35 graduate engineering students attended the seminar to learn more about the growing field of transportation engineering. Specifically, presentations focused on technology applications that have the capability to make substantial improvements in the quality of life.

Dr. Daniel S. Turner, Professor and former Executive Director of the UTCA, began the discussion with an overview of traffic safety in Alabama. He shared sobering statistics from the 2006 Alabama Traffic Crash Facts compiled by the CARE Research and Development Laboratory (CRDL) at The University of Alabama.

- The number of fatalities in 2006 rose 5.2% to 1,208.
- One person was killed in a traffic crash every 7 hours and 15 minutes.
- Most Alabama crashes (71.5%) occurred in urban areas, but most fatalities (68.9%) occurred in rural areas.
- Based on 2006 data, if you are a typical driver in Alabama, there is a 52.60% probability that you will be involved in an injury or fatal crash while driving an automobile in your lifetime.

(Note: The 2006 Alabama Traffic Crash Facts may be downloaded from the CRDL website at http://care.cs.ua.edu.)

Saravanan Gurupackium, a PhD candidate in transportation engineering, was the second featured speaker of the seminar. He presented an overview of his dissertation research entitled “Technology and Optimization Diagnosis of Intersection Saturation.” The purpose of this project is to study existing traffic congestion and determine effective solutions to intersection saturation. An intersection is said to be saturated when traffic volumes increase to the point that one green signal is insufficient to clear the vehicles waiting to pass through the intersection.

In order to overcome this problem, it is necessary to understand the changes happening in the traffic operational parameters during the onset of congestion. The parameters considered in this study include gap acceptance, lane changing, lane distribution, start-up lost time, queue spill back, and control adherence.

McFarland Boulevard in Tuscaloosa, AL is the sample study road, and the UTCA ITS/TMC lab will be used for data collection. The ITS lab is fed by ten CCTV cameras along the study road. The collected data will be analyzed, and techniques and simulation runs will be performed to determine possible solutions to intersection saturation.

The last presenter of the afternoon was Ayse Narci, a PhD candidate in transportation engineering. She is working on a project entitled “Alabama Freight Congestion” that investigates an accurate and advanced methodology to identify and analyze truck-related congestion and truck bottlenecks on Alabama Interstate highways. The study will also forecast truck traffic growth and future truck congestion and explore ways to mitigate truck congestion.

(Note: continued on next page)
The study uses Level of Service (LOS) as a quality measure describing operational conditions in terms of service measures such as volume to capacity ratio, flow rate, traffic density, speed, travel time, freedom to maneuver, traffic interruptions, and comfort. An interstate traffic simulation generated by the CORSIM program will yield truck traffic density information. This project proposes to use a fuzzy logic system to combine two service measurements – volume to capacity ratio and truck traffic density – to obtain the LOS for traffic.

All three presentations generated questions and comments from the audience. The UTCA welcomed this opportunity to share transportation-related research with fellow CCE faculty and graduate students.
Development of a Knowledge-Based System for Foundry Waste Recycling

(This news item is a summary of an article based on UTCA Project #03116 entitled Development of a Knowledge-Based System for Foundry Waste Recycling by G. P. Moynihan, D. J. Fonseca, and E. A. Richards. This summary contains verbatim excerpts and was approved for use in this newsletter by G. P. Moynihan. The article appears in its entirety in the Journal of Solid Waste Technology and Management, Vol. 33, No. 3, 2007, pp. 73-80.)

Foundries are major consumers of recycled materials. Scrap iron and steel are primary sources of raw materials, accounting for 85% of the 10 million tons of ferrous castings produced annually in the U.S. (U. S. Dept. of Energy, 1997). Reclaimed copper, aluminum, lead, tin, and zinc are also widely used. Despite these efforts, foundries are also one of the major polluting industries in the United States. Many foundry processes generate wastes that must be disposed of, and this tends to be a costly problem.

Across the country, state highway agencies are advocating the incorporation of usable residual materials wherever possible (Collins and Ciesielski, 1994).

[At least] five state DOTs are known to have full time recycling coordinators. These states – Texas, Massachusetts, Pennsylvania, North Carolina, and California – have reaped positive benefits from their programs. The coordinator acts as the focal point to connect state DOT, state EPA, solid waste producers, and potential entrepreneurs to promote increased waste material use and to reduce barriers (Ferragut, 2000).

Applicable foundry-related residuals include fly-ash, non-ferrous slag, steel slag, and blast furnace slag. The potential use of these non-hazardous solid wastes in the construction of highways, roads, and bridges suggests that valuable economic and environmental benefits are possible for the foundry industry. However, a major obstacle is the lack of available expertise in assessing non-hazardous waste for recycling and reuse.

The foundry industry is dominated by small companies. Of the 3,100 foundries in the United States, 79% employ fewer than 100 people (U. S. Dept. of Energy, 1997). Relevant expertise to assess the potential of waste recycling tends to be limited and is generally not accessible to many of the small foundries in this country.

A logical solution to the limited availability of this expertise is to automate it via a computer information system. An expert system utilizes specialized knowledge and artificial intelligence techniques to solve problems at the level of a human expert (Giarratano and Riley, 1998). The objective of this research was to develop a prototype web-based expert system to assist foundries in assessing and analyzing their industrial residuals as potential road construction material. This web-based expert system considers Environmental Protection Agency regulations and standards for hazardous waste. In operation, users answer a series of screen prompts regarding the details of their specific industrial process. The software then leads the user through the process of systematically identifying constituent materials, identifying potential health or safety issues, and prescribing recommendations for their recycling.

Recycling and reuse activities conserve natural non-renewable resources, reduce waste volumes, and can provide significant financial benefits through avoiding disposal costs and using resources efficiently. In a competitive market, this translates into lower consumer product prices and, consequently, a higher corporate profit. Recycling is also a viable way to lessen the impacts of current and developing environmental regulations in a proactive manner.

References


Note: For the latest information on using recycled foundry materials in highway construction, go to http://www.fhwa.dot.gov/pavement/recycling/.
Alabama Freight Analysis Framework

(The UTCA is performing several projects regarding truck congestion in Alabama. The following news item shows why. This news item is a summary of an article entitled Freight Transportation Profile - Alabama Freight Analysis Framework published by the Office of Freight Management and Operations of the Federal Highway Administration. Text and tables are presented verbatim as they appear in the article. The entire article may be downloaded at http://www.ops.fhwa.dot.gov/freight/freight_analysis/state_info/alabama/al3.pdf.)

To help decision makers identify areas in need of capacity improvements, the U.S. Department of Transportation developed the Freight Analysis Framework (FAF), a comprehensive national data and analysis tool, including country-to-country freight flows for the truck, rail, water, and air modes. FAF also forecasts freight activity in 2010 and 2020 for each of these modes. Information about the methodology used in developing FAF is available on the Office of Freight Management and Operations’ website www.ops.fhwa.dot.gov/freight.

**Table 1. Freight Shipments To, From, and Within Alabama: 1998, 2010, and 2020**

<table>
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<tbody>
<tr>
<td>State Total</td>
<td>459</td>
<td>664</td>
<td>813</td>
<td>263</td>
<td>514</td>
<td>809</td>
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<td>By Mode</td>
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<tr>
<td>Air</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>7</td>
<td>16</td>
<td>27</td>
<td></td>
<td></td>
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<tr>
<td>Highway</td>
<td>310</td>
<td>469</td>
<td>585</td>
<td>228</td>
<td>452</td>
<td>711</td>
<td></td>
<td></td>
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<tr>
<td>Unspecified</td>
<td>7</td>
<td>9</td>
<td>11</td>
<td>&lt;1</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
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<tr>
<td>Rail</td>
<td>92</td>
<td>121</td>
<td>143</td>
<td>20</td>
<td>36</td>
<td>54</td>
<td></td>
<td></td>
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<tr>
<td>Water</td>
<td>50</td>
<td>64</td>
<td>73</td>
<td>6</td>
<td>10</td>
<td>14</td>
<td></td>
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<tr>
<td>By Destination/Market</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Domestic</td>
<td>426</td>
<td>619</td>
<td>755</td>
<td>245</td>
<td>480</td>
<td>749</td>
<td></td>
<td></td>
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<tr>
<td>International</td>
<td>33</td>
<td>45</td>
<td>58</td>
<td>17</td>
<td>34</td>
<td>60</td>
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Note: Modal numbers may not add to totals due to rounding.

**Table 2. Top Five Commodities Shipped To, From, and Within Alabama by All Modes: 1998 and 2020**

<table>
<thead>
<tr>
<th>ALABAMA</th>
<th>Tons (millions)</th>
<th>Commodity</th>
<th>Value (billions $)</th>
<th>1998</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commodity</td>
<td>1998</td>
<td>2020</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary Traffic</td>
<td>66</td>
<td>180</td>
<td>Secondary Traffic</td>
<td>68</td>
<td>276</td>
</tr>
<tr>
<td>Nonmetallic Minerals</td>
<td>64</td>
<td>83</td>
<td>Chemicals/Allied Products</td>
<td>26</td>
<td>58</td>
</tr>
<tr>
<td>Lumber/Wood Products</td>
<td>62</td>
<td>112</td>
<td>Lumber/Wood Products</td>
<td>23</td>
<td>71</td>
</tr>
<tr>
<td>Coal</td>
<td>53</td>
<td>75</td>
<td>Transportation Equipment</td>
<td>22</td>
<td>56</td>
</tr>
<tr>
<td>Clay/Concrete/Glass/Stone</td>
<td>34</td>
<td>76</td>
<td>Food/Kindred Products</td>
<td>21</td>
<td>70</td>
</tr>
</tbody>
</table>

Table 2 shows the top five commodity groups shipped to, from, and within Alabama by all modes. The top commodities by weight are secondary traffic, nonmetallic minerals, and lumber or wood products. Secondary traffic is also the top commodity by value. Secondary traffic is defined as freight flows to and from distribution centers or through intermodal facilities. No commodities are assigned to this intermediate step in the transportation process.)
Safety officials are warning hundreds of thousands of heavy truck operators, drivers, mechanics, and federal and state commercial vehicle inspectors about the dangers of manually adjusting automatic slack adjusters on vehicles equipped with air brakes.

National Transportation Safety Board (NTSB) Acting Chairman Mark V. Rosenker bluntly warned: “Manually adjusting automatic slack adjusters is dangerous. It should not be done, except during installation or in an emergency to move the vehicle to a repair facility.” He emphasized that manual adjustment of this brake component masks the real reason why the brakes are not maintaining adjustment, giving the driver a false sense of security about the effectiveness of the brakes, which will likely go out of adjustment again soon. It also causes abnormal wear to the internal adjusting mechanism for most automatic slack adjusters, which may lead to failure of this brake component.

The warning comes as a result of an NTSB investigation into a fatal runaway dump truck accident in Glen Rock, PA, that has shown the deadly consequences of improper maintenance of automatic slack adjusters for air brake systems. In the April 11, 2003 accident, a dump truck was traveling on a steep downgrade when the driver found he was unable to stop the truck. The truck struck four passenger cars, one of which struck three children who were on a nearby sidewalk. A driver and an 11-year-old child from one of the passenger cars were killed.

The NTSB concluded that the mechanics who worked on this truck did not look for underlying problems with the slack adjusters or other brake components. They misdiagnosed the brake problems, probably because they were not properly trained on the function and care of automatic slack adjusters and how they relate to foundation brake systems. Consequently, they repeatedly manually adjusted the automatic slack adjusters, a dangerous practice.

“The warnings in existing materials available to owners, drivers, mechanics, and inspectors of air-braked vehicles equipped with automatic slack adjusters have not been successful in communicating the inherent dangers of manually adjusting automatic slack adjusters to correct out-of-adjustment brakes,” the NTSB said.

Even organizations that specialize in truck maintenance and repair often give out wrong or inadequate information on automatic slack adjusters. During the probe into the Pennsylvania accident, investigators found that several private study guides of the ASE’s truck brake test inadequately cover the maintenance of automatic slack adjuster-equipped brakes, and some contain incorrect information. NTSB said one study guide wrongly states, “Automatic slack adjusters may require periodic adjustment.” The NTSB is concerned because many mechanics use the study guides as a source of general maintenance information as well as for test preparation. “It is imperative that these guides contain thorough and accurate information about automatic slack adjusters,” said Rosenker.

The NTSB said many truck operators, who do not consider themselves motor carriers and have very little or no interaction with safety regulators or trucking organizations and associations, must be alerted to the problem. These vehicles are used by a diverse cross-section of operators, including fire departments, landscaping companies, school bus operators, general contractors, and even vacationers who have large recreational vehicles.

In addition, the NTSB investigation found that lack of knowledge and skills in operating air-braked vehicles played a role in the accident. The 21-year-old driver of the dump truck had been on the job for less than two weeks and had never driven an air brake-equipped vehicle before joining the company. He received no training on how to drive an air brake-equipped vehicle — an important failure because air brakes on trucks operate differently from hydraulic brakes on passenger cars. The rear brakes on the truck were out of adjustment and provided little or no braking force. The driver pumped the brakes, reducing the capability of the front brakes and exacerbating the loss of braking capability in the out-of-adjustment rear brakes. Until recent widespread use of antilock brake systems (ABS) brakes, drivers of hydraulically-braked vehicles (passenger cars, SUVs, pickups and other light-duty trucks) were taught to pump their brakes in emergencies. But in an air-braked vehicle, pumping the brakes depletes the air pressure, thereby drastically reducing the brakes’ capability.
The UTCA has funded six projects from 2008 UTC monies. An additional project is being funded by the Alabama Department of Transportation. These projects are briefly described in the following pages.

**Project #08103 - Transit Modeling and Mitigating Traffic Congestion**, Dr. Sharif Melouk, Principal Investigator, UA.

The main goal of this research effort is to evaluate, analyze, and recommend mitigation strategies to transportation system designers and decision-makers. This goal will be achieved by developing a decision support tool that is based on simulation optimization. The proposed simulation optimization method will incorporate optimization techniques, in the form of meta-heuristics, with existing and/or new traffic simulation models. This tool will help identify the congestion points and potential mitigation strategies to alleviate the congestion. Furthermore, this tool will be used to evaluate the impact of transit alternatives on traffic congestion by incorporating their cost, safety, and effectiveness for alleviating congestion. To test the validity and the applicability of this method, a specific traffic congestion scenario will be identified in Mobile, AL, the planned test site for this research.

**Project #08111 - Advanced Transportation Institute**, Dr. Daniel Turner, Principal Investigator, UA.

The objective of the Advanced Transportation Institute is to introduce junior and senior high school students, with preference to traditionally underrepresented groups in engineering disciplines, to transportation careers. The University Transportation Center for Alabama (UTCA) of The University of Alabama and the Alabama Department of Transportation (ALDOT) Personnel Bureau co-sponsor the Institute. It is held in ALDOT’s headquarters complex in Montgomery, AL. The agenda for the week-long program includes presentations on transportation careers, how to select and enter a university, and how to obtain scholarships. Additional presentations are made by practitioners to explore various sectors of transportation, including planning, design, construction, maintenance, traffic engineering, and bridge design. There are many transportation professionals in the ALDOT headquarters complex to provide good presentations and to serve as role models to the involved students.

**Project #08112 - Transit Evacuation Planning: Two Case Studies**, Dr. Daniel Turner, Principal Investigator, UA.

This project addresses the transit emergency evacuation of individuals without personal vehicles or the means to acquire them during coastal extreme events. It will be a joint effort of the University Transportation Center for Alabama (UTCA) and the Center for Transportation Policy Studies (CTPS) at the University of North Carolina in Charlotte and will use Mobile, AL and Wilmington, NC as simultaneous case studies. The result will be detailed plans for both cities that include time tables, procedures for pre-identification of the evacuating population, communication, coordination, collection of evacuees, staging, medical attention, efficient passenger loading, optimum flow of buses for line haul to destinations, and similar issues. This project will utilize and expand known protocols and software to develop a detailed evacuation plan that identifies individuals with the need and desire for evacuation, enrolls them in a database, contacts them to communicate procedures and time tables, develops initial pick up and delivery to a staging area, develops triage and loading protocols, develops best routing and timing for line haul from the city, and optimizes all transportation portions of the overall scenario. The project will include extensive interactions with city, regional, and state emergency management authorities and will identify appropriate volunteer agencies or groups for involvement in communication to and support of the evacuees as the process is initiated and conducted.

**Project #08204 - Expanding Portable B-WIM Technology**, Dr. Wilbur Hitchcock, Principal Investigator, UAB.

The potential of B-WIM systems to support law enforcement and transportation planners in the management of oversized and overweight commercial vehicles was recognized by an International Scanning Study Team during a visit to Europe in the summer of 2006. The UTCA is currently testing the state-of-the-art commercially available B-WIM technology (SiWIM) developed by CESTEL, a Slovenian technology company. This project will be an extension of work initiated in 2007 under UTCA Project #07212 - Bridge Weigh-on-Motion (B-WIM) System Testing and Evaluation which is establishing a baseline understanding of the commercial SiWIM system. The SiWIM B-WIM system has demonstrated promising results in Europe and Canada, and testing was commenced in Alabama in late October 2007. However, the current technology can limit the practical use of B-WIM to a small range of bridge sizes and structural design types, and there is need to improve the overall accuracy and reliability of B-WIM technology. The proposed project will test the Si-WIM system on two additional bridge structures of differing primary girder type and will explore beyond the current state of technology to recommend concepts and potential additional sensor technology configurations which could significantly contribute to more reliable and versatile B-WIM systems. Expanded use of video images, laser technology, and other sensors will be considered coupled with the concepts for solution algorithms, data pattern recognition, and information processing. In addition, promising research employing layers of carbon nanotubes to produce inexpensive wireless sensors for measuring strains could have a major impact on the affordability and range of use of B-WIM.

continued on next page
Project #08206 - Implementing Active Traffic Management Strategies in the United States, Mr. Andrew Sullivan, Principal Investigator, UAB.

Congestion management is certainly not a new concept; systems to address congestion have been implemented in many areas of this country and include strategies such as variable message signs, HOV lanes, toll lanes, and network surveillance. These strategies, however, have largely been deployed so that they function independently and are often implemented only on preset schedules or manually in response to an incident. Active Traffic Management utilizes many of these same strategies but does so in concert in order to maximize the efficiency of transportation facilities during all periods of the day and during both recurrent and non-recurrent congestion. It stresses automation to dynamically deploy strategies to quickly optimize performance and enhance throughput and safety. Active Traffic Management has been described by the FHWA as "the next step in congestion management" and identified as an area of interest for future research. The proposed project attempts to build on the initial research performed by an FHWA scanning team and develop practical guidelines for implementing Active Traffic Management strategies in the United States.

Project #08401 - Driver Reaction at Railroad Crossings, Dr. Jay Lindly, Principal Investigator, UA.

A congressional earmark has provided funds to install and assess an extended crossing gate (the StopGate™ system from Quixote Corporation) at a highway/rail grade crossing for three years. The crossing gate will be installed on a crossing in Troy, AL. The objective of the study is to document the reaction of drivers to the new gate. The study will include a 90-day 'before' and a 90-day 'after' study of driver behavior at the crossing and a three-year study to monitor crashes/near misses observed by railroad personnel at the crossings. This study is being funded by the Alabama Department of Transportation.