UTC creates student sponsorship opportunities

Hosted by the K-State Department of Civil Engineering, the University Transportation Center (UTC) is a multidisciplinary research organization dedicated to bringing together transportation professionals, educators and researchers to identify rural transportation problems — and to solve them. The theme of the K-State UTC is the safety and sustainability of rural transportation systems and infrastructure. The center is directed by CE Professor Robert W. “Bobb” Stokes.

Since its establishment in fiscal year 2006, the UTC has secured and distributed more than $2.3 million in research funding that has supported 30 research projects beyond those funded by the Kansas Department of Transportation’s (KDOT) Kansas Transportation Research and New Developments (K-TRAN) program. The center has awarded 36 UTC scholarships, 27 GRA positions and funding support for the completion of five M.S. theses.

The center has awarded 50 student travel grants to attend national transportation conferences, provided funding support for the KDOT Summer Internship Program and played a key role in establishing a distance education-based graduate certification program in transportation engineering.

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Complete details on the University Transportation Center’s programs are available on the web at http://transport.ksu.edu/


K-State UTC hosts 94th annual Transportation Engineering Conference

The 94th annual Kansas Transportation Engineering Conference was held at the K-State Student Union from April 10-11, 2012. The conference attracted approximately 600 national, state and local transportation professionals to K-State for the exchange of information concerning the latest developments in transportation engineering policies and practices. Complete conference details can be found at http://www.dce.k-state.edu/conf/transportation.
Eugene Russell, professor emeritus of civil engineering, was recently selected to receive the 2012 Wilbur S. Smith Award from the American Society of Civil Engineers for his contributions to enhance the role of civil engineers in highway engineering. He was also recently appointed chair of the Roundabout Committee of the Transportation Research Board, a division of the National Research Council.

“Forming and chairing the Transportation Research Board’s Roundabout Committee has been the achievement of a longtime goal,” Russell said.

Russell has more than 53 years of experience in all phases of highway and traffic engineering, including 48 in academia where he has been a teacher and researcher. As a professor emeritus at K-State, Russell primarily conducts research and is currently involved in three projects dealing with highway safety issues.

Russell has been at K-State since 1974. While at the university he has served as director of the Center for Transportation Research and Training, director of the Traffic Assistance Services for Kansas program, associate director of the Region VII, Mid-America Transportation Center, ascended from associate professor to professor emeritus and held the Mark and Margaret Hulings chair in civil engineering. During his tenure at K-State, Russell has been principal or co-principal investigator on more than 100 funded research projects, has been author or co-author on more than 170 published technical papers and reports, handbooks, manuals and training videos and has made around 150 presentations at conferences across the U.S. and world. Many of these projects dealt with rail-highway grade crossing safety and recently, roundabout safety and operation.

Russell has been honored many times for his teaching and research activities. The Council of University Transportation Centers honored him with the Distinguished Contribution to University Transportation Education and Research Award, given annually since 1998 to identify individuals with a long history of significant and outstanding contribution to university transportation, education and research. Missouri University of Science and Technology honored him as an outstanding graduate by naming him to the Academy of Civil Engineers. He is a fellow and life member of the American Society of Civil Engineers and the Institute of Transportation Engineers. He is a life member of the American Railroad Engineering and Maintenance of Way Association and the National Association of County Engineers. He is a committee member emeritus of the Transportation Research Board’s Grade Crossing Committee on which he has served continuously since 1974. He is also a member of other professional organizations and national committees dealing with highway safety.

Russell is grateful for the recognition from the American Society of Civil Engineers.

“I am very proud to be a fellow and life member of this great organization and the civil engineering profession,” he said. “And I feel greatly honored by the Wilbur Smith Award.”

Smith named Transportation Center Student of the Year

Wilson Smith is originally from Independence, Mo., where his parents still live. He earned his BSCE from Kansas State University in December 2009 and began working on his master’s degree immediately afterward in the geotechnical engineering field under the supervision of Dunja Peric, associate professor of civil engineering. Wilson’s research involves investigating how feasible calcium lignosulfonate (lignin) is as a soil stabilizer for unpaved roads. Work addressing early-age strengths of lignin-sand mixes has just been completed. Wilson’s research will provide an assessment of the feasibility of lignin use. This will be accomplished by allowing specimens to dry in a controlled temperature and humidity environment. Wilson’s research has been partially funded by the Kansas State University Transportation Center, and has been featured at the Capitol Graduate Research Summit in Topeka, KS., and in ASCE’s Civil Engineering magazine. It is also the subject of a short video on K-State’s Youtube channel.

Wilson’s accomplishments were recognized at the 21st annual Student of the Year Awards ceremony, sponsored by the U.S. Department of Transportation in Washington D.C., on Jan. 21, 2012.
The Traffic Assistance Services for Kansas (TASK) program is a cooperative highway safety-training program funded by the National Highway Traffic Safety Administration (NHTSA) and administered by the Kansas Department of Transportation (KDOT). The primary objective of the TASK program is to provide training to Kansas public employees who have traffic safety responsibilities. The program has been in existence since 1980.

The program’s training courses are developed and delivered by senior faculty from Kansas State University (K-State) and the University of Kansas (KU). Guidance on the program of courses is provided by the TASK Advisory Committee, consisting of representatives from KDOT, the Federal Highway Administration (FHWA) and city and county transportation agency personnel. In 2006 the TASK program was incorporated into the K-State Transportation Center’s (K-State UTC) technology transfer and education programs. The program typically offers four to five one-day workshops per year on topics such as the Manual on Uniform Traffic Control Devices (MUTCD), Traffic Engineering for Technicians, Use of Traffic Control Devices to Improve Highway Safety, and Bicycles, Pedestrians and Traffic Calming (a Safety Perspective). In addition to the scheduled offering of courses, city and county agencies may request on-demand courses to be delivered at a date and location that best meets their needs.

In recent years, the program has delivered on-site training to approximately 150 local transportation agency personnel per year across the state of Kansas. Participants in the program receive continuing education units (CEUs) or progression development hours (PDHs) from the K-State Division of Continuing Education. In addition, selected TASK courses can be used to meet the requirements of the Kansas (KU) LTAP Center’s Roads Scholar Program. In 2009 the TASK Program received the K-State Division of Continuing Education award for Excellence in the Provision of Non-Credit Programming. The TASK program is a highly successful, on-going highway safety training program involving KDOT, the state’s two major universities and local transportation agencies.

K-STATE UTC TASK program featured at TRB UTC SPOTLIGHT CONFERENCE
TASK, Traffic Assistance Services for Kansas: Providing Quality Training in Highway Safety since 1980

Background
The Traffic Assistance Services for Kansas (TASK) program is a cooperative highway safety-training program funded by the National Highway Traffic Safety Administration (NHTSA) and administered by the Kansas Department of Transportation (KDOT). The primary objective of the TASK program is to provide training to Kansas public employees who have traffic safety responsibilities. The program has been in existence since 1980.

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In Partnership with

Federal Highway Administration
National Highway Traffic Safety Administration
Kansas Department of Transportation
Kansas State University Transportation Center
Kansas University Transportation Center

TASK Instructors

Dr. Bobb Stokes
Professor of Civil Engineering
Kansas State University

Dr. Thomas Mulinazzi, P.E.
Professor of Civil Engineering
University of Kansas

Lynn Berges, P.E.
Traffic Safety Engineer
Bureau of Local Projects
KDOT
TASK Course Offerings

2009 Manual on Uniform Traffic Control Devices (MUTCD) for Technicians
This one-day course provides an introductory overview of the 2009 edition of the MUTCD, with emphasis on MUTCD applications related to work zones (temporary signing). The course also provides an overview of sign retroreflectivity requirements and an introduction to guidelines for Incident Management (emergency temporary traffic control). This course is intended for local traffic/highway technicians.

Work Zone Signing (Temporary Traffic Control)
This half-day course covers Part 6 of the 2009 Manual on Uniform Traffic Control Devices. It is directed to personnel actually doing the traffic control in work zones. Topics covered include the uses of channelizing devices, barricades, warning lights and proper sign placement. This course is a joint offering of the University of Kansas LTAP Program and TASK.

Bicycle and Pedestrian Facilities/Traffic Calming: Safety Perspective
This half-day course is directed at local professional staff with responsibilities for the planning, design and operation of bicycle and pedestrian facilities. The course also provides an introduction to residential traffic calming strategies and ADA requirements.

Traffic Engineering for Technicians
This one-day course provides basic instruction in selected traffic engineering topics such as speed studies, sight distance, traffic safety studies, traffic volume studies, pedestrian facilities and roadside design. The course is appropriate for persons with an engineering background who has little or no training in traffic engineering.

Geometric Design for Very Low Volume Roads
This course provides training in the application of the material in AASHTO’s 2001 Guidelines for Geometric Design of Very Low-Volume Local Roads. The one-day course is directed at professional engineering staff with responsibilities for the design of low volume local roads.

Use of Traffic Control Devices to Improve Highway Safety
This one-day course is based on the Low Cost Safety Improvements course developed by the FHWA Resource Center at Olympia Fields, Ill. The course describes the specific safety benefits associated with the application of certain traffic control devices and roadside treatments. The course is directed at local traffic/highway professionals and technicians.

MUTCD for Emergency Response Personnel
This half-day course is intended for personnel with responsibilities for implementing incident management traffic control measures. The course covers Section 6-I Traffic Incident Management of the 2009 MUTCD. Personnel with an interest in this course are encouraged to attend the MUTCD for Technicians course.

On Demand/On Site Course Offerings
In addition to the scheduled program of course offerings, the courses listed above are available on demand to state and local agencies in Kansas. On demand courses require a minimum class size of five students and will be delivered at a location and date determined by the agency requesting the course(s). Requests for on-site courses must be made at least six-weeks in advance of the anticipated date(s) of the course(s).

For more information, visit www.dce.k-state.edu/conf/task

Poster Presented at:
TRB UTC Spotlight Conference on Improving Roadway Safety Programs Through University-Agency Partnerships
Washington, D.C., Nov. 2-3, 2011
According to the National Highway Safety Administration, crashes caused by vehicles leaving their travel lanes led to more than 18,000 of the 33,808 motor vehicle traffic fatalities recorded in 20091 (53 percent of all traffic fatalities). Installing centerline rumble strips (CLRS) can be an effective, low-cost safety measure for preventing vehicles from crossing the centerline into oncoming traffic, and the Kansas State University (KSU) Transportation Center research team has been studying how to get the most from their use.

Rumble strips are raised or indented patterns installed to alert drowsy or inattentive drivers to the fact that they are drifting out of their lane. On two-lane, two-way highways, rumble strips are often installed on the centerline to keep drivers from drifting into oncoming vehicles, causing a cross-over crash. However, there may be negative issues or concerns that question rumble strip use on some roads and under certain road conditions. Several departments of transportation have reported concerns from the public about exterior noise created by tires on rumble strips, of a perceived decrease in visibility of pavement markings installed over the strips, and the effect rumble strips may have on a vehicle’s handling characteristics.

Over the past few years the K-State UTC research team has been studying these and other concerns to determine under what circumstances CLRS use could be maximized.

The methodologies that the K-State team applied included:

- Surveying all state DOTs to verify their current guidelines for installation of CLRS,
- Applying Bayesian before-and-after methods to investigate the safety effectiveness of CLRS in Kansas,
- Collecting field data to document the extent of exterior noise levels that could disturb residents who live near highways with CLRS,
- Collecting field data to investigate how CLRS impact vehicular lateral position and operational speed on lanes of varying lane and shoulder widths, with and without shoulder rumble strips (SRS), and
- Developing regression equations to predict the number of crashes expected with CLRS applications on these lanes.

The survey results indicate that the use of CLRS increased about 372 percent from 2005 to 2010. Currently, 36 states are using CLRS, and 17 states have written policies or guidelines for CLRS installation. Guidelines for CLRS installation usually include crash history, annual average daily traffic (AADT), pavement structural condition, lane and shoulder widths and posted speed limit. The combination of CLRS and shoulder rumble strips (SRS) is rarely used on sections of highways with narrow lanes (typically 3 feet) or no shoulder.

1The latest year for which data are available.
The results of the before-and-after safety effectiveness study of CLRS in Kansas showed that after CLRS installation on several roads in Kansas, total correctable crashes (those not involving animals, intersections, or due to ice on the pavement) were reduced by 29.21 percent. Correctable crashes involving fatalities and injuries were reduced 34.05 percent. Cross-over crashes were reduced by 67.19 percent. All of these reductions are statistically significant. Finally the number of run-off-the-road crashes were reduced by 19.19 percent, although this reduction was not statistically significant. The two methods applied (Naive and Empirical Bayes) presented statistically similar results with no statistical difference between the two shapes (football and rectangular) of CLRS used in Kansas.

External噪音 - 实验设置

外部噪音取决于速度（低速产生较低的噪音）、车辆类型（较重的车辆通常产生更多的噪音）和距离条带的距离（较远的距离产生较少的感知噪音）。足球和矩形的CLRS显著提高了距离150英尺外的外部噪音水平。没有统计学差异。200英尺距离，从道路中心测量，被确定为潜在的外部噪音关注区域，不包括穿过CLRS的半挂车。

从对驾驶员行为的研究来看，具有或不具有SRS的隔音条的配置，对车辆的横向位置和速度水平有影响，尽管速度偏移量并非实际显著。在拥有窄肩的路面上，对于CLRS和都没有（CLRS和SRS）条件，驾驶员距离道路中心线较近。在中等肩宽的路面上，如果SRS存在，驾驶员倾向于靠近中心线行驶。在宽肩的路面上，如果CLRS存在，驾驶员靠近道路边缘行驶，否则更远。

设置道路管传感器用于收集车辆侧边位置的数据

安全性能函数模型的研究表明，当AADTs超过3,000时，在所有研究的道路上安装SRS是有效的。对于窄路而言，要求在SRS和CLRS之间进行选择时，如果AADTs介于3,000和5,750之间，CLRS是优先选择。
## FY 2012 Research Program

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<td>Quantifying the Effect of Prestressing Steel and Concrete Variables on the Transfer Length in Pretensioned Concrete Crossties</td>
<td>Peterman, Beck, Wu, Duong</td>
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<td>KSUTC-12-2</td>
<td>Determination of Acceptance Criteria for Prestressing Strand in Pretensioned Applications</td>
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<td>Sustainable and Durable Concrete Pavement Aggregates</td>
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<td>In Progress</td>
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</tbody>
</table>

*KSU-xx-x denotes projects funded by the Kansas Department of Transportation (KDOT) through the Kansas Transportation Research and New Developments Program (K-TRAN). These projects numbers are assigned by KDOT. xx denotes fiscal year, i.e., 09 = 2009.

KSUTC-xx-x denotes projects funded through the K-State UTC. Projects jointly funded by KDOT and the K-State UTC are listed separately.

http://transport.ksu.edu/research/project
Financial Report (FY12)

Funding Sources

- KDOT: 42%
- RITA: 40%
- K-State Cost Share: 18%

Expenditures of Funds

- Research: 77%
- Education: 6%
- Administration: 17%