



KENTUCKY TRANSPORTATION CENTER

Annual Report 2011

RESEARCH
TECHNOLOGY TRANSFER
EDUCATION



www.ktc.uky.edu

KENTUCKY TRANSPORTATION CENTER VISION FOR 2015

The following paragraphs describe the vision of what we would like to achieve by 2015. It provides a target upon which we can build goals, objectives, and a strategic plan.

Customer Satisfaction and Customer Relationships

The Kentucky Transportation Center has developed and implemented tools for measuring our customers' perceptions regarding the quality and value of the products and services we provide. These tools are consistently utilized for all projects, regardless of who the client is. Feedback provided by these tools is scrutinized on a regular basis to identify improvements that can be made in policies and/or procedures.

Research Excellence / National Prominence

The Kentucky Transportation Center enjoys a strong national reputation in selected, high-priority areas of research and technology transfer. KTC researchers are widely known for their subject matter expertise, group facilitation skills, effective communications, and project management skills. KTC's technology transfer professionals are nationally recognized for excellence in information delivery and workforce development. This reputation is reflected in strong name recognition at all applicable national and regional meetings and conferences.

Size of Program and Diversity of Funding Sources

The size of KTC's research and technology transfer program has grown substantially over the past five years, primarily due to the identification and cultivation of new funding sources (federal, state, local, and private-sector) and the growth of non-SPR funding. The Center has strategically targeted areas of research and technology transfer that are important to KYTC and to the nation. KYTC receives substantial benefits from having direct access to KTC's research results and technology transfer resources. The SPR program remains strong and vital.

Work Environment / Employee Satisfaction

KTC is a rewarding and enjoyable place to work. Employee retention is high, as is employee morale. KTC provides opportunities and support for all employees to continue learning and to grow professionally throughout their careers. Exceptional employee performance is recognized and rewarded. Employees are highly motivated and highly productive. Co-workers treat each other with courtesy and respect. The workforce includes a strong and increasing presence of minorities and women.

Implementation and Value of Research

Tools and processes have been put in place to promote, facilitate, and track the implementation of research results. Implementation is a priority for KTC and is accomplished through a team effort, involving practitioners, researchers, and technology transfer professionals. Implementation is considered from the earliest stages of each research project. The benefits resulting from the implementation of research findings are well-documented and well-disseminated. This information is used to promote the value of transportation research and technology transfer programs both within Kentucky and nationally.

The full version of the Vision can be found on our website at www.ktc.uky.edu/vision.html


DIRECTOR'S MESSAGE

The past year was my first full year as Director of the Kentucky Transportation Center. It was an exciting, eventful, challenging, and rewarding year for the Center and for me. I am continually impressed with the dedication and commitment of all of our staff—in research, technology transfer, education, and administration—as they strive daily to provide outstanding service to our many customers.

Shortly after I became Director in March 2010, we worked together to develop a collective vision for where we want to be in 2015. Based upon that vision, we then developed our strategic plan for 2010-2015. The Center's strategic plan aligns with and supports the strategic plans of the University of Kentucky, the College of Engineering, and the Kentucky Transportation Cabinet. We continue to refine our plan as we establish specific targets and identify the metrics to be used in tracking our progress toward the vision.

In 2011, we initiated changes that will enable us to further diversify the Center's programs and funding sources, which is a major part of our vision. These changes included preliminary steps toward expanding our marketing/outreach and program development activities, establishing a freight and logistics program area, and hiring a waterways research coordinator.

It continues to be my pleasure and privilege to serve alongside the many talented faculty and staff who make up the Kentucky Transportation Center. We love and enjoy what we do, but we also take very seriously our responsibility to serve the citizens of Kentucky, the Kentucky Transportation Cabinet, the University of Kentucky, and our many other partners and clients. If there is any way we can be of service to you, please don't hesitate to contact me or any of our staff. I look forward to working with all of you as we strive to improve the safety, efficiency, and sustainability of Kentucky's transportation system.



Joe Crabtree, Ph.D., P.E.

BRIDGE PRESERVATION

Ted Hopwood, Program Manager

FLUORESCING COATINGS FOR IMPROVED INSPECTION DURING BRIDGE MAINTENANCE PAINTING

KTC is working with the Kentucky Transportation Cabinet and the structural steel coating industry to develop a revolutionary tool to aid in the inspection of protective coatings for steel. It has been long recognized that the service life of a protective coating for steel is closely related to the quality of the coating application. Due to the growing scarcity of competent applicators, pressure to return bridges/highways to full service with reduced traffic impacts, and a reduction in qualified coating inspection personnel, a tool to assist inspectors in assessing the quality of coatings application is much needed. To that purpose, KTC identified the use of coatings with Optically Activated Pigments (OAPs), currently being used by the Department of Defense, as a potential tool.

A research study, KYSPR 09-377 “Fluorescing Coatings for Improved Inspection during Bridge Maintenance Painting”, was initiated with the primary objectives of developing laboratory methods for evaluating the effectiveness of OAP coatings and, upon obtaining positive laboratory results, working with the KYTC to conduct a field trial using those coatings. The laboratory work was comprised of two primary elements, constructing mock bridge beams to be coated with OAP coatings for inspection effectiveness evaluation and accelerated weathering testing for coating performance.

Mock bridge beams were coated with a variety of systems using OAP coatings. Designed flaws in the applications were cataloged, and experienced coating inspectors assessed the coatings using normal white light for a timed inspection and fluorescing light, to activate the OAPs, for a second timed inspection. Inspection using the fluorescing light increased the flaw detection by 15%. As for the second element, the coatings will complete accelerated weathering in January 2012, but preliminary performance appears to be good.

Based on the laboratory results, KTC supplied the Cabinet with draft Special Notes to include in a maintenance bridge painting project. Two bridges in District 10 were selected to be painted with the OAP coatings. Results of the field trial revealed some issues with the coatings but also verified that there is potential for beneficial use of this inspection tool. Further field trials to “fine tune” the coatings chemical makeup, handling, application, and inspection specifics are needed.



Inspection of OAP coated mock bridge beam using white light.



Inspection of OAP coated mock bridge beam using UV light.

CONSTRUCTION MANAGEMENT

Paul Goodrum, Program Manager

MAINTAINING AND EXPANDING THE SKILLS OF KEY WORKFORCE SEGMENTS THROUGH TRAINING

Technicians are a vital component to the success of any roadway construction project. Training and developing adequate numbers of qualified technicians is a substantial endeavor that requires a comprehensive examination of the qualifications of existing technicians versus the anticipated needs of the technicians on future Cabinet projects. This year, a study was completed on how to maintain and expand the skills of this key workforce segment through training. Based on the survey results of over 200 member of the Cabinet's existing technician and engineering workforce, the study identified high priority areas where training is needed, especially in skills and knowledge related to Maintenance, Environment, and Structures. More results are available in the on-line report available through the Transportation Center's website.

Work continues on current SPR projects related to Contract Time Determination, and Contractor Evaluations in the Contractor Selection Process. The National Research Council's National Cooperative Highway Research Program awarded projects on Forecasting Construction Staffing Needs on Future Projects, and Project Planning and Scoping to Improve the Execution of Highway Projects which is joint project with Texas A&M's Texas Transportation Institute.



DECISION SUPPORT SYSTEMS

Ted Grossardt, Program Manager

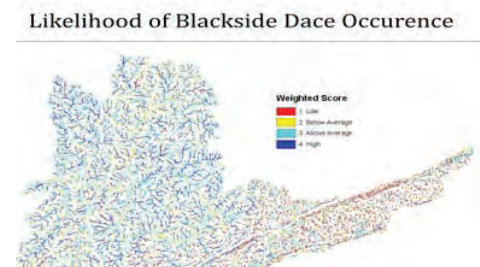
COMMUNITY VISIONING FOR NUCLEAR REMEDIATION: THE PADUCAH GASEOUS DIFFUSION PLANT (PGDP) DECOMMISSIONING PROJECT

A two-year project for the Department of Energy, in collaboration with the UK College of Communications and the Kentucky Research Center for Energy and the Environment at UK has recently been completed.

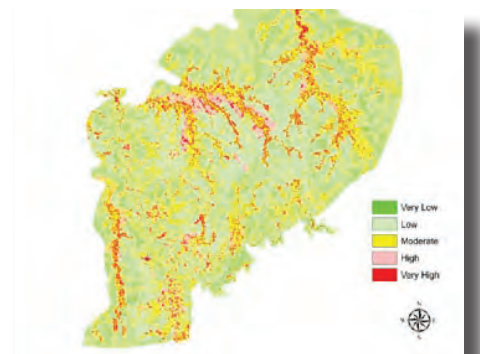
The community must decide how to best use the 3000 acre site after the gaseous diffusion plant is torn down. This has been a polarized discussion for the community, placing economic development advocates in opposition to environmental safety advocates. The KTC research team of Grossardt, Ripy, Blandford and Bailey developed a customized Structured Public Involvement protocol to allow hundreds of citizens to rate a broad range of future scenarios. The data they gathered was used to build mathematical preference models. Ripy and Blandford created the 3D and 4D scenario visualizations and fly-throughs, and also built the online polling service to gather preference data online. Contrary to current perceptions, the team discovered a significant portion of the citizens make measured trade-offs between jobs and cleanup, rather than concentrating solely on one extreme or the other. The project was nominated for the Rheinhard Mohn Prize for Vitalizing Democracy, given annually by the Bertelsmann Foundation in Germany to the best public participation process worldwide.



Other PSDS Projects: Program to Select Historic Truss Bridges for Rehabilitation



Other Projects: Expert Systems GIS-Based Predictive Model for Threatened and Endangered Species (above) and Archaeological Sites (below)



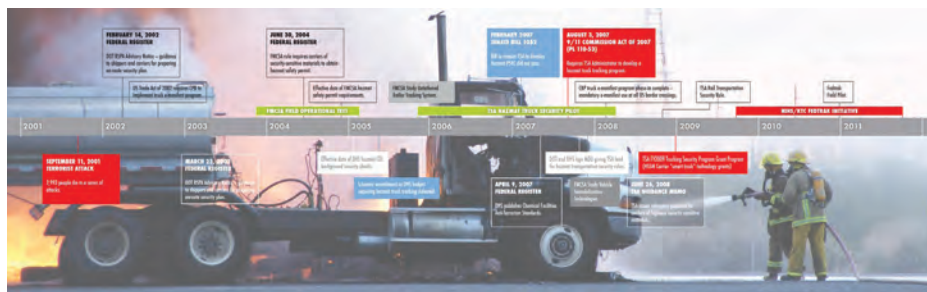
FREIGHT & LOGISTICS

Doug Kreis, Program Manager

SECTION 1554 EVALUATIONS: RESEARCH, ANALYZE, EVALUATE AND MAKE RECOMMENDATIONS FOR COST, BENEFITS, AND USAGE OF TRACKING TECHNOLOGIES FOR MOTOR CARRIERS TRANSPORTING HIGHWAY SECURITY SENSITIVE MATERIAL

Every day, thousands of motor carriers move freight across our nation's highways. Some of these shipments contain highly sensitive cargo such as hazardous materials. In 2007, the "Implementing Recommendations of the 9/11 Commission Act of 2007" was placed into law. Among its provisions, Section 1554 directed the Transportation Security Administration (TSA) to develop a program to track highway motor carrier security-sensitive materials for Tier 1 and Tier 2 hazardous materials. Subsequently, TSA developed twenty-three Security Action Items (SAI's). These SAI's are currently intended as voluntary security practices to be considered by motor carriers transporting Tier 1 and Tier 2 hazardous materials. These SAI's are divided into four areas: 1) general security; 2) personnel security; 3) unauthorized access; and 4) en-route security.

As a result of an established area of expertise in freight and logistics pertaining to the transport of hazardous materials and supply chain management, TSA designated the Kentucky Transportation Center as the Research Organization dedicated to reviewing the SAI's. This intensive review will involve researching, analyzing, evaluating and ultimately making recommendations to TSA regarding the costs, benefits and utility of a tracking program for motor carriers transporting highway security sensitive materials. The Kentucky Transportation Center will assist TSA in meeting these obligations as they relate to Section 1554 of the 9/11 Commission Act.



CURRENT RESEARCH PROJECTS

1. FedTrak
2. Green Infrastructure
3. Temporary Flood Barriers
4. Analysis of Port Sustainability
5. Port Sustainability Audit/Training

ITS & TRAFFIC MANAGEMENT

Jennifer Walton, Program Manager

AUTOMATED RAMP SCREENING SYSTEM FOR WEIGHT/INSPECTION STATIONS

Researchers at the Kentucky Transportation Center, in cooperation with the Kentucky Transportation Cabinet, Kentucky State Police, Division of Commercial Vehicle Enforcement, and the Federal Motor Carrier Safety Administration (FMCSA), designed, developed, and deployed a Performance and Registration Information Systems Management (PRISM)-based automated ramp screening system for commercial vehicles. The system utilizes optical character recognition technologies to capture and decode the license plate number, the issuing jurisdiction, and the USDOT number from every commercial motor vehicle (CMV) as it enters the Boone County fixed weigh/inspection station on southbound Interstate 71. In addition to the license plate reader (LPR) and USDOT reader (USDOTR) devices, a dedicated short-range communication device (transponder reader) operating at 915 MHz is utilized to identify carriers with a compatible transponder when information is available. These devices, along with the station's existing weigh-in-motion and CMV sorting system, are utilized primarily to identify vehicles that are in the PRISM Target file or have current Federal Out-of-Service orders. This system has been proven through performance to achieve the desired goals of identifying high-risk CMV's for increased inspections. Not only does this system screen for these safety characteristics, but it also screens vehicles based on their registration, insurance and tax status, weight, and safety history.

Inspection: 76d099a7-4d91-42fb-975e-c9cb14e0811e
Date: 11:02:19 AM 12/09/2011 Last Updated: 11:02:27 AM 12/09/2011

Data We Captured

Lic. Plate: RD5T89 Texas (100) Recheck All
DOT: 740036 (100) CENTRAL HAULING CO
Transponder:
Weight: 48200.0

Data We Screened

Lic. Plate: RD5T89 TX
Safety DOT: 740036 CENTRAL HAULING CO

PRISM License Plate RD5T89 (TX) was found in the PRISM Target File Explain

PAVEMENTS, MATERIALS & GEOTECH

Clark Graves, Program Manager

QUANTIFYING OVERLAY QUANTITIES FOR BRIDGE DECK REPAIR PRIOR TO LETTING USING GROUND PENETRATING RADAR (GPR)

In the summer of 2010 the Kentucky Transportation Center used a 1.5 GHz. ground-coupled GPR system to determine the extent of the deteriorated areas on the Glover Cary Bridge (KY 2155) in Owensboro, KY. Prior to using results from the GPR bridge deck survey, which gives an x-ray type of view into the concrete bridge deck, estimators used a visual approach to estimate that the entire bridge deck would need to be replaced at an estimated cost of \$17 million dollars. After collecting and processing the GPR data, the quantity of bridge deck repair/replacement area was reduced to approximately \$3 million dollars. Ultimately the GPR data gave engineers a more thorough picture of what areas needed to be repaired/replaced within the ridge deck, saving both time and money in both the design and construction phases.



GPR DATA Collection



New completed bridge deck

CURRENT RESEARCH PROJECTS

1. Safety Wedge Performance
2. Utilization of LiDAR (Light Detection and Ranging)
3. Wintertime Pavement Repair
4. Evaluation of Mechanically Stabilized Earth Walls for Bridge Ends in Kentucky
5. Guidelines for Geotextile and Geogrid Use on Highway Projects
6. Asphalt Pavement Durability
7. Pipe Inspection Criteria
8. Local Calibration and Strategic Plan for Implementation of the AASHTO Mechanistic Empirical Pavement Design Guide (MEPDG)
9. Identification of Factors which Influence Pavement Performance

STRUCTURES

Issam Harik, Program Manager

REPAIR AND STRENGTHENING OF THE KY218 BRIDGE IN HART COUNTY

The AASHTO Type I precast girders on the three-span bridge on KY218 over Blue Springs Creek had developed cracks close to the piers on both the outside spans. The retrofit consisted of filling the cracks with repair epoxy and strengthening the cracked locations with steel fiber reinforced polymer (SFRP) fabric. In order to prevent future cracking, the remaining uncracked beams on either side of the piers were strengthened with SFRP fabric, while the abutment ends were strengthened using Carbon Fiber Reinforced Polymer (CFRP) Rod Panels.



Crack Repair



Application of SFRP fabric

The four span reinforced concrete girder bridge on Caldwell Road over the Blue Grass Parkway had impact damage in one of the edge girders over the eastbound lane of the parkway. An over-the-height truck impact had caused one of the bottom reinforcing bars to break while considerable spalling of concrete was visible on the outside surface of the girder. The retrofit included replacing the lost concrete and providing CFRP Rod Panels to replace the strength loss due to the damaged rebar. CFRP fabric was then wrapped around the repaired section of the beam to prevent concrete spalling in the event of future impacts.



Application of CFRP Rod Panels



Application of CFRP fabric

TECHNOLOGY TRANSFER

Martha Horseman, Program Manager

The Technology Transfer Program strives to provide new and existing technology and research practices to transportation agencies across Kentucky. The program accomplishes this through the Roads Scholar and Road Master Training Programs and other specialized training, newsletters, how-to manuals, legislative and regulatory news, lending library, and by providing on-site technical assistance.

The Technology Transfer Program continues to offer a broad range of training from professional development to qualification programs to hands-on activities. These programs are designed to improve skills and increase knowledge of Kentucky's transportation workforce and decision makers.



During 2011, the Technology Transfer training team presented 240 workshops with over 5,600 participants. The Roads Scholar and Road Master Training Programs continue to grow, with over 190 individuals completing these programs in 2011. They conducted the Asphalt Certification Program, leading to the certification of 42 new technologists and requalification of 14 technologists. The Asphalt Field Technician Certification resulted in 171 individuals earning their certification. Kentucky Erosion Prevention and Sediment Control (KEPSC) for Roadway Inspectors training resulted in 318 individuals earning their certification. The Pesticide Continuing Education classes were attended by 735 participants, and 130 participants were certified through the Training and Testing program. The Work Zone Employee Qualification Program had a record year, qualifying 556 flaggers, 350 technicians and 99 supervisors.

A free service provided to local governments is the Safety Circuit Rider Program which uses crash data to locate high-incident sites along roadways and assists communities in finding low-cost roadway safety improvements. Additional information on this program, can be found on page 12.

Technology Transfer has made a great effort to expand the use of social media sites (Facebook and Twitter) to better reach our customers with immediate information such as regulatory news, new training courses, and press releases for local and state government activities. We continually update the website to make it more user-friendly. The number of visits to the website has increased by 48% over the past year and it has been viewed in over 50 countries. New informational fliers were developed for several programs, including Safety Circuit Rider, Equipment Loan Program, and the Roads Scholar and Road Master Training Programs.



The Transportation Library serves state and local governments, the university, transportation professionals, and the general public and is the only transportation library in Kentucky. The library has resources available for loan and access to transportation-related databases and internet resources for responding to information and research questions. The Online Video Lending Library is a free and user-friendly resource for individuals to find videos for safety meetings and training. The library also produces an eNewsletter and a new Library@Work series, providing easy access to a wide range of transportation-related subjects. The library continues to expand their holdings with the addition of Transportation Research Board (TRB) and other national publications through an agreement with the Kentucky Transportation Cabinet.

SAFETY TRAINING

The *Manual on Uniform Traffic Control Devices* (MUTCD) addresses sign visibility and with the 2003, second version, established minimum retroreflectivity levels. For traffic signs to be effective in providing important information to drivers, agencies must implement a sign maintenance program that regularly addresses the MUTCD minimum requirements. In an effort to assist government agencies in meeting the January 2012 deadline, the Technology Transfer Program developed the Sign Retroreflectivity course. This course provided participants with an overview of the standard, requirements, and the compliance dates. Participants gained a better understanding of the MUTCD and basic sign types. Demonstrations were provided on sign sheeting and retroreflectivity concepts. There are five basic methods used to evaluate signs. Participants received hands-on training, which offered them a better understanding of which method was best for their agency.



The Technology Transfer Program was pleased to announce to participants that the equipment used during the course was available as part of the Equipment Loan Program. The program was designed for local governments to have access to equipment that may not otherwise be affordable. Equipment available through the loan program includes a retroreflectometer, comparison panels, and calibration signs which were demonstrated in the Sign Retroreflectivity course. Other equipment for loan is a digital ball bank indicator, used for determining safe curve speeds for horizontal curves, and traffic counters, which identify the speed and amount of traffic on selected routes.



TRAFFIC & SAFETY

Jerry Pigman, Program Manager

CAUSES AND COUNTERMEASURES RELATED TO MOTORCYCLE CRASHES

The number of motorcycle crashes (especially fatal crashes) has increased substantially in Kentucky in the past several years. A detailed analysis of crashes involving motorcycles was undertaken to provide insight into the characteristics and causes and identify potential countermeasures for addressing the problem. The objectives of this study were to evaluate and analyze motorcycle crashes and identify causes and potential countermeasures to reduce the number and severity of the crashes.

An analysis of traffic crashes involving motorcycles was conducted using several years of crash data. The characteristics of motorcycle crashes were compared to all traffic crashes. A more detailed review and analysis was performed for fatal crashes involving motorcycles. Roadway locations (0.3-mile spots and one-mile sections) with the highest frequency of motorcycle crashes were identified. Motorcycle crash data were analyzed by county and city. Separate analyses of driver license and motorcycle registration data were conducted.

Based on contributing factors to motorcycle crashes as determined from the analyses, countermeasures were recommended in the general categories of vehicular, environmental/roadway, and human/driver. Considering the most frequent causes, countermeasures were recommended to address motorcycle/rider conspicuity, roadway curve warning signs and markings, and motorcyclists' safety equipment and skills training.



CURRENT RESEARCH PROJECTS

1. WIM Data Collection and Analysis
2. Development of Design Guidelines
3. Evaluation of Wet-Nighttime Delineations
4. Development of Traffic Engineering Guidelines
5. Development of Training for Traffic Signal Technicians
6. Two-Lane Road Capacity
7. Transition Zone Design
8. Adaptive Signal Systems
9. Alternative Snowplow Procedures and Markers
10. Historical Travel Time Analysis

SPECIAL INITIATIVES

Safety Circuit Rider Program

The Kentucky Local Technical Assistance Program (LTAP) was chosen to administer a pilot Safety Circuit Rider Program funded by the Federal Highway Administration (FHWA) - Kentucky Division Office of Safety in 2005. It operates from the Technology Transfer Program (T2) of the Kentucky Transportation Center with the University of Kentucky. The program is designed to provide safety-related information, training, and support to agencies responsible for local roadway safety.

Collision data is used to locate high-crash sites along roadways and to assist communities in finding low-cost roadway safety improvements. The Safety Circuit Rider also works with local governments to implement these low-cost improvements. Examples of these improvements are removal of fixed objects such as trees, brush, stumps, etc. and installation of signage per the Manual on Uniform Traffic Control Devices guidelines. This technical advice is offered free of charge and is helping communities across the state of Kentucky save lives every day.

Kentucky's Program gained national recognition for excellence. The Safety Circuit Rider Program was presented nationally at the National Roads Safety Audit Peer Exchange, the Rural Roads Safety Forum, the American Public Works Association, and many other national and local conferences. The Program was featured in the Safety Circuit Rider Programs Best Practices Guide, FHWA-SA-09-019. Other states have used Kentucky's program as a model to establish or improve an existing program (Florida, Tennessee, Wisconsin, Idaho, and Missouri).

Focus Counties: Counties were selected based on traffic crash data collected in the *Analysis of Traffic Crash Data in Kentucky (2005-2009)* research report. This data was used to identify locations that have abnormal rates or numbers of crashes. The six focus counties selected are Boyd, Elliott, Garrard, Henderson, Jessamine, and Pendleton. The County Fiscal Courts are being contacted and offered assistance with the goal of providing suggestions and guidance on low cost safety improvements for these high crash routes.

HRRRP Signs Pilot Project: The Kentucky Transportation Cabinet and FHWA are coordinating to provide funds to rural county governments through the High Risk Rural Roads Program (HRRRP) for signing curves. The program has started with a pilot project in the Northern Kentucky counties of Boone, Kenton and Campbell. The Safety Circuit Rider will assist with the signing plans and in developing the implementation plan for the rest of Kentucky.



Before



After

Low Cost Safety Improvements Example-city of Scottsville: A vehicle had crashed into this hole, taking the guardrail with it. Grating was installed by the local KyTC Bridge Crew. The cost of material was less than \$1,000.

SPECIAL INITIATIVES

Center for Advanced Traffic Solutions (CATS)

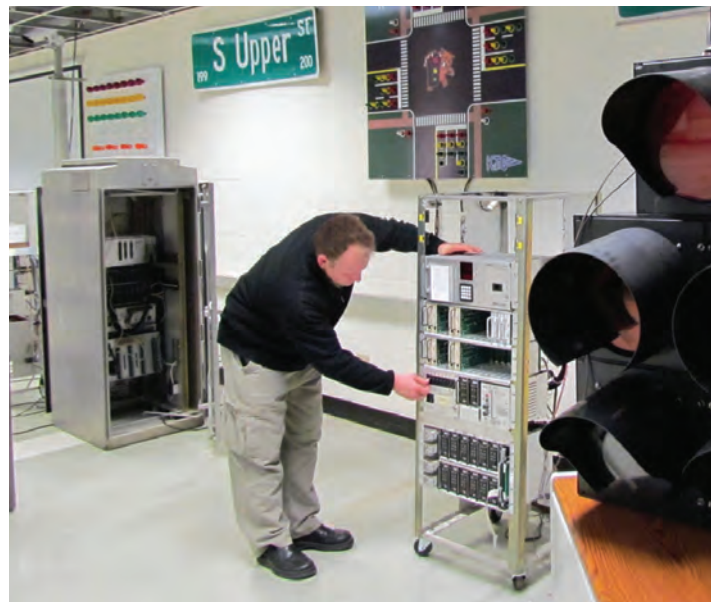
The Kentucky Transportation Center (KTC) at the University of Kentucky opened its new Center for Advanced Traffic Solutions (CATS) laboratory in February 2011. Developed by KTC's Adam Kirk and Pat Johnson, the new signal training and research lab is used for traffic operations research, education, and training.

The primary use of the CATS lab is to support the development and delivery of a training course for Kentucky Transportation Cabinet signal technicians. "Experienced technicians can use the facility to develop, test and refine innovative signal operation strategies, without impacting traffic operations," Kirk said.

"Thanks to Dean Lester's office, we have been given a prime location across from undergraduate classrooms, which can only serve to attract interest from students," he said. "It is our hope that this facility will serve to increase student interest in traffic operations while building the next generation of traffic engineers. If successful, graduates will leave UK having practical hands-on experience."

The CATS lab also aims to improve the experience for commuters to UK. CATS Lab staff have secured \$200,000 in Highway Safety Improvement Program funds to work with Lexington to implement an advanced adaptive signal control system on South Limestone Street between Euclid Avenue and Waller Avenue.

"Adaptive signal controls are the state-of-the-art in signal operations," said Johnson. "They are used to adjust signal timing in real time based on traffic demand and arrival patterns. What's that mean? Less time waiting at red lights."



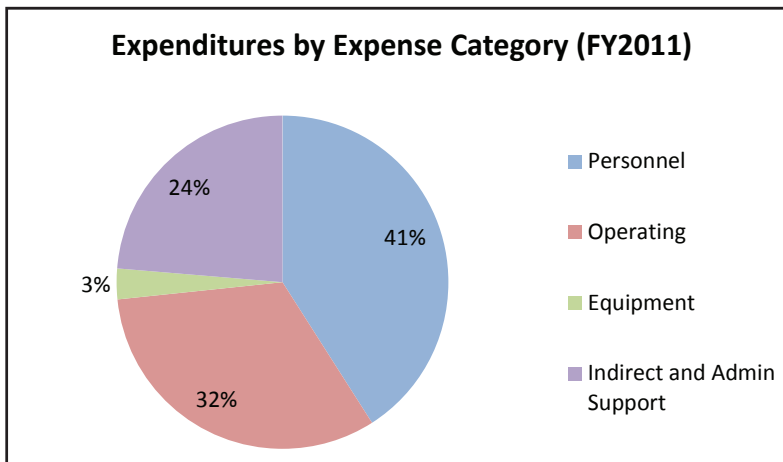
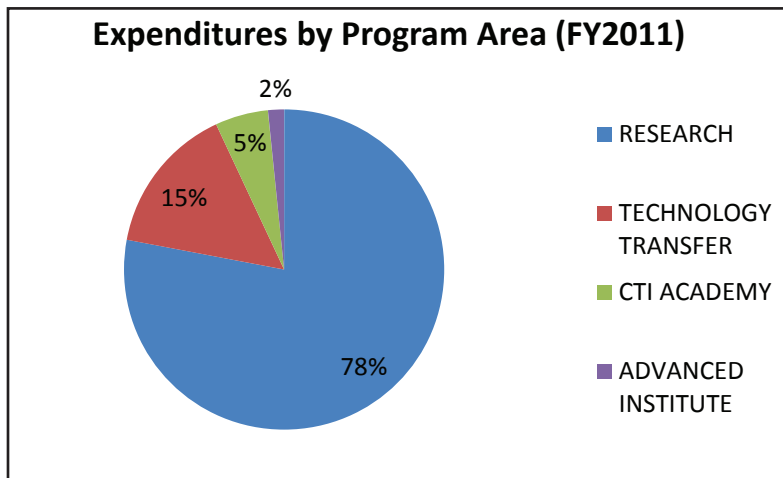
FINANCIAL SNAPSHOT

FY2011 Expenditures*

Category of Expenses	Research **	Technology Transfer	CTI Academy	Advanced Institute	Total Program
Personnel	3,255,524	628,133	223,474	67,559	\$4,174,690
Operating	2,578,650	656,976	188,509	4,040	\$3,428,175
Equipment	236,399	1,455	0	0	\$237,844
Indirect Costs and Admin Support	1,883,185	0	144,242	12,789	\$2,040,216
Total Program	\$7,953,758	\$1,286,554	\$556,225	\$84,388	\$9,880,925

*Expenditure detail by subcategory of expense is available on request (1-800-432-0719)

**The research program for FY11 consisted of over 100 projects conducted for numerous agencies and organizations. Primary research sponsors included the Kentucky Transportation Cabinet, the Federal Highway Administration, the Federal Motor Carrier Safety Administration, the US Department of Homeland Security, and the North American Preclearance and Safety System (NORPASS). For selected projects and programs, KTC partnered with the University of Louisville, the University of Tennessee, Northwest University, Oak Ridge National Laboratory, the Asphalt Institute, and Battelle Memorial Institute.



PROJECTS COMPLETED

Report Number	Title
KTC-10-20/TA26-06-1F	“Sustainable Practices and Related Performance Measures at State Highway Agencies,” Lenaham O’Connell, Ph.D., December 2010
KTC-10-21/RSF28-09-1F	“Local Evaluation for the Cumberland Gap Tunnel, Regional ITS Deployment,” John Crossfield, P.E., Lenahan O’Connell, Candace Wallace & Jennifer Walton, P.E., December 2010
KTC-11-01/SPR260-03-1F	“Implementation of Remote Sensing Technology on the I-64 over US 60 Bridge,” Issam Harik, Ching Chiaw Choo, Abheetha Peiris and Dan Eaton, January 2011
KTC-11-02/KH70-11-1F	“Pavement Evaluation of the Springfield Bypass,” Brad Rister & Clark Graves, March 2011
KTC-11-03/UI56-09-1F	“Maintenance Customer Sourcing,” Clark Graves & David Allen, March 2011
KTC-11-04/SPR400-10-1F	“Causes and Countermeasures Related to Motorcycle Crashes,” Kenneth R. Agent, March 2011
KTC-11-05/SPR398-10-1F	“Evaluation of Pilot Project: Emergency Traffic Central for Responders,” Jennifer Walton, Kenneth R. Agent & Sarah McCormack, June 2011
KTC-11-06/SPR402-10-1F	“Identification of Secondary Crashes and Recommended Countermeasures,” Jerry G. Pigman, Jennifer R. Walton & Eric C. Green, May 2011
KTC-11-07/SPR378-09-1F	“Automated Chemical Stabilizing of Keaded Paint Residue from Bridge Maintenance Painting,” Bobby W. Meade, Theodore Hopwood II & Sudhir Palle, June 2011
KTC-11-08/SPR412-11-1F	“Assessment of Kentucky Department of Vehicle Regulation’s Tax and Fee Structure,” Andrew Martin, Jennifer Walton, Mark Spellman & Mark Bell, June 2011
KTC-11-09/SPR414-11-1F	“Evaluation of the SAFE Patrol Program in Kentucky,” Pengfei Li & Jennifer Walton, July 2011
KTC-11-10/SPR401-10-1F	“Kentucky Bridges with High-Strength Quenched and Tempered Steel,” Theodore Hopwood II & Jared Fairchild, June 2011
KTC-11-11/SPR383-09-1F	“Demonstrate and Evaluate the use of DSRC Technology for Travel Time Monitoring and Incident Detection,” David Hunsucker, Pengfei Li & Joseph Crabtree, July 2011
KTC-11-12/SPR391-10-1F	“Developing and Implementing Strategies to Address ‘Freddie the Free-Roader,’” David Hunsucker, Mark Bell & Mark Spellman, July 2011
KTC-11-13/KSP1-11-1F	“2011 Safety Belt Usage Survey in Kentucky,” Kenneth R. Agent & Eric R. Green, August 2011
KTC-11-14/FR182-10-1F	“Experimental Coating on I-264 Jefferson County,” Bobby Meade & Theodore Hopwood II, August 2011
KTC-11-15/KSP2-11-1F	“Analysis of Traffic Crash Data in Kentucky (2006-2010),” Eric R. Green, Kenneth R. Agent & Jerry G. Pigman, September 2011
KTC-11-16/KSP4-11-1F	“2011 Driver Attitudes and Awareness Survey,” Kenneth R. Agent, Eric R. Green & Ronald E. Langley, September 2011
KTC-11-17/SPR405-10-1F	“Improved Bridge Expansion Joints,” Sudhir Palle, Theodore Hopwood II, & Bobby Meade, October 2011
KTC-11-18/SPR310-9-2F	“Improving Intersection Design Practices,” Nick Stamatiadis & Adam Kirk, October 2011
KTC-11-19/SPR415-11-1F	“Road Diet Concept Evaluations,” Nick Stamatiadis, November 2011

STAFF LISTING

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Highway Transportation

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