

2005

2000

1995

1990

1985

1980



# 2005 Annual Report

*Innovation and Service Beyond Expectation*



## SILVER ANNIVERSARY

### *Our Mission*

We provide services to the transportation community through research, technology transfer and education.

We create and participate in partnerships to promote safe and effective transportation systems.

### *Our Values*

#### **Teamwork**

Listening and communicating along with courtesy and respect for others.

#### **Honesty and Ethical Behavior**

Delivering the highest quality products and services.

#### **Continuous Improvement**

In all that we do.

## Message from the Director

**PAUL E. TOUSSAINT, PE**

This year we are commemorating the 25<sup>th</sup> year of the Kentucky Transportation Center (KTC) and its service to the Commonwealth. During the past 25 years, many changes have taken place in transportation as reflected by the technology we employ; the secondary (but crucial) impacts on social and environmental concerns; and how the transportation business is conducted in this state and the nation. At KTC we continue to keep abreast of the current technology and its impact on our business of transportation.

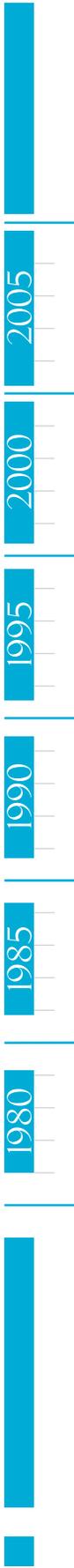
At times like this, it is interesting to pause and reflect on the past. More often than not, our expectations have not kept pace with reality. Some 50 years ago at the advent of the interstate system, do you think that President Eisenhower fully anticipated the impacts that it would have on transportation, our culture, or our economy? I doubt it! The economic, social and yes, even the political ramifications of that transportation system have far exceeded expectations. Today, citizens (taxpayers) are reaping the benefits and paying the costs of that 1955 decision. What will we be saying in 25 years about the decisions made in 2005?

In the next 25 years, KTC will continue to be involved in the hard science issues in the hopes of addressing such things as perpetual pavements, new scientific approaches to smart materials (nano-technology) that are lighter, stronger, and more environmentally friendly, and other break through technologies that are not even on the horizon at this time.

In addition, we will also have to offer solutions to soft science problems that will likely dominate in the next couple of decades. Some of these items relate to such things as adequacy of financing, organizational and technical capacity and issues of sustainability (energy sources) that are fundamental to transportation development.

No matter what happens in the next 25 years, there are two things that will remain constant for transportation. The first is that it will continue to take a lot of hard work from dedicated professional employees just like it has in the past 25 years; and secondly, it is going to take a resource stream that will meet the needs. Bottom line—we have seen dramatic changes in transportation over the past 25 years, but in all probability—we have not seen anything yet!





If you have a transportation issue that needs to be studied or a research project idea, please let us know. You can call any staff person or simply go to our web site's home page at [www.ktc.uky.edu](http://www.ktc.uky.edu) and click on the [research idea button](#). You will be asked to provide a brief statement about the issue or idea and some contact information. **Give it a try!**



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## Community Transportation Innovation Academy

The Academy for Community Transportation Innovation (The Academy) is devoted to educating professionals and developing new approaches and tools to ensure compatibility, sustainability, safety and efficiency of transportation systems. The Academy combines education and research with the overall goal of enhancing and accelerating the integration of transportation project development with community involvement and environmental sensitivity.

The Academy is being administered by the University of Kentucky in collaboration with the University of Louisville in order to build on the strengths of both institutions. Kentucky’s regional universities are expected to participate on a selected bases. The Kentucky Transportation Cabinet is an active partner for program guidance.

### EDUCATION

#### Highlighted Project: Transportation Systems Management Graduate Certificate Program

This interdisciplinary certificate program is supported both by the Academy and the South-eastern Transportation Centers Program, administered by FHWA. Each year students from Civil Engineering, Geography,

Public Administration, Historic Preservation and Landscape Architecture participate in fall and spring semester seminars funded by the CTI-Academy. These seminars are designed to highlight the fundamental challenges of transportation planning and its effect on the total human environment. The fall semester focuses on the knowledge base for the students, including finance, environmental, land use, health and the built environment, community development, and public involvement. The spring semester emphasizes application of this knowledge in a real-world setting, as the students will provide support to a Kentucky county grappling with change.



STUDENTS READY TO TRY THEIR HAND AT DEFENSIVE DRIVING COURSE.

**RESEARCH**

**Highlighted Project: Public Involvement in Transportation and Land Use Planning**

This research project is designed to extend the insights gained through research in Structured Public Involvement. Researchers are working on a method to allow the public to participate productively and non-confrontationally in planning for the future of their communities. Through the use of various visual aids, such as photographs, plan views, and GIS-linked 3D software, citizens will be able to clearly see the potential outcomes of various transportation and land use policies, and choose those outcomes they most desire. The Academy is most grateful for the cooperation of Woodford County Planning and Zoning for allowing us to work with them in a real-world environment.

NOTE: Some of the research projects listed in the following program areas also receive funding from the academy research program.



SAMPLE LAND USE PLAN AND PHOTOGRAPH OF NEIGHBORHOOD FOR USE BY RESIDENTS IN CHOOSING DEVELOPMENT OUTCOMES.



## Construction Management



**DONN HANCHER, PROGRAM MANAGER**

### MAJOR PROJECT ACTIVITY FOR 2005

- ▶ Outsourcing Project Delivery Functions
- ▶ Rapid Cost Construction Methods
- ▶ Analysis of the Costs of Utility and Right-of-Way Conflicts
- ▶ Conceptual Cost Estimating Guide
- ▶ Cost Management Tracking System

### Highlighted Project: Outsourcing of KyTC Project Delivery Functions

Population growth and the rise in daily travelers is putting increased demands on state DOTs. Both the quality and service expectations of the public and business/industry contribute to this demand. Despite increased workload, DOTs are facing staff shortages due to retirement, as well as other resource constraints. Outsourcing, or contracting out work to external parties, is one possible way to meet needs in a timely and cost effective manner.

This project evaluated the potential effectiveness, benefits, concerns, and requirements for outsourcing. Practices in other states and each of the Kentucky highway districts were surveyed and examined. Generally, outsourcing is increasing and specific processes must be developed to ensure its success.

Recommendations include the need to: maintain core competency for all essential functions; allow for significant and valid variation of outsourcing different activities and amounts by highway district; and improve processes to evaluate and compare total costs of performing the function (in house vs. outsourcing).





## MAJOR PROJECT ACTIVITY FOR 2005

- ▶ Engineering Properties of Subgrade Soft Soil Layer
- ▶ By-Products Resource Manual
- ▶ Use of Ultra-Lightweight Geofoam in Culvert Extensions

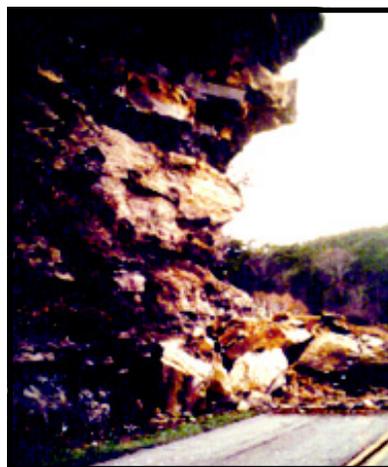
## Highlighted Project: Geotechnical Database

A comprehensive geotechnical database was developed for Kentucky highways. Data may be entered and retrieved by any number of users simultaneously in a Windows' client/server structure on a real-time basis. Geotechnical data were partitioned into five major categories:

- ▶ Rock slopes
- ▶ Landslides
- ▶ Roadways
- ▶ Structures
- ▶ Soil and Rock Engineering Data

Data were gathered from field inventories and past engineering reports. Preliminary hazardous ratings of about 10,000 rock slopes on Kentucky's highways were made. Geometric, geological, and traffic attributes, GPS locations (latitudes and longitudes), photographs, hazardous ratings of each rock slope and landslide are stored

in the geotechnical database. Statistical analyzers and engineering applications for performing "on-line" analyses



are included in the database. The database provides:

- ▶ A means of retrieving soil and rock data rapidly to manage problems
- ▶ Information for planning new and reconstructed facilities
- ▶ Data for assessing earth quake susceptibility and identifying landslide -and rockfall- prone areas





## *ITS (Intelligent Transportation Systems)*

**JOE CRABTREE, PROGRAM MANAGER**

### **MAJOR PROJECT ACTIVITY FOR 2005**

- ▶ Crash Site Time Management
- ▶ WIM Technologies Evaluation
- ▶ Incident Management Strategic Plan
- ▶ Incident Detection Technologies Evaluation
- ▶ Transportation Operations Center Evaluation
- ▶ Route Disruption Analysis
- ▶ Commercial Vehicle Safety System Development

### **Highlighted Project: Kentucky's Highway Incident Management Strategic Plan**

The objective of this project was to develop a strategic plan that provides a vision and strategy for significantly improving all aspects of highway incident management in Kentucky. The project tasks included a literature review, a national survey, self-assessment of Kentucky's incident management processes, analysis of case studies, a statewide stakeholder forum, identification of "best practices," and the development of the Strategic Plan components.



The plan includes a mission statement for the Kentucky Transportation Cabinet regarding highway incident management. It identifies four goals with some sixteen objectives and 49 specific strategies that can be used to accomplish the objectives. These strategies are ranked by priority, and each strategy has a recommended time frame for implementation.

Follow-on activities (some involving support from the center) have been initiated by the Transportation Cabinet to implement the high-priority recommendations of the Strategic Plan.



## Pavements and Materials

**DAVE ALLEN, PROGRAM MANAGER**



### MAJOR PROJECT ACTIVITY FOR 2005

- ▶ Evaluation of Pavement Management System
- ▶ Pavement Profiling Equipment
- ▶ Pavement Materials, Design, Construction and Experimental Techniques
- ▶ Evaluation and Implementation Issues for the 2002 Pavement Design Guide
- ▶ Asphalt Pavement Durability Issues
- ▶ Permeability of Kentucky Asphalt Pavements
- ▶ Determination of Distress Levels and Rehab Cycles
- ▶ Pavement Ridability Issues

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### Highlighted Project: Pavement and Subgrade Assessment of I-265, Jefferson County

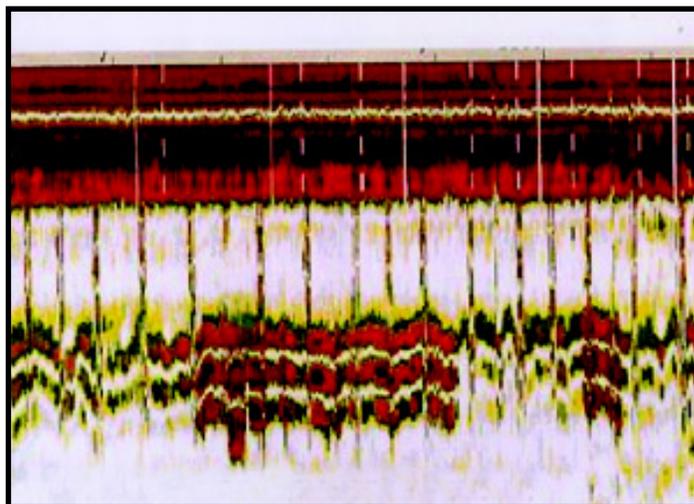
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The Kentucky Transportation Center was asked to investigate settlement of concrete pavement slabs and differential settlement between driving lanes on the Gene Snyder Freeway in Jefferson County.

The center researchers used ground penetrating radar (GPR) to determine that there was excess water in parts of the subgrade, and in various locations in the dense-grade aggregate under the pavement. GPR also indicated that there was (in some locations) a weak soil layer on top of the rock road-bed. This soil layer was not a part of the original design section. In addition, falling weight deflectometer (FWD) tests on the concrete pavement indicated there was very poor load

transfer across the joints. This pointed to failure in the dowel bars.

Center researchers assisted the Transportation Cabinet in developing a remedial design.



I-265, GENE SNYDER FREEWAY. RED AREAS SHOWS EXCESS WATER IN DGA UNDER CONCRETE PAVEMENT.

## Structures and Coatings



ISSAM HARIK, PROGRAM MANAGER

### MAJOR PROJECT ACTIVITY FOR 2005

- ▶ Seismic Evaluation of I-24 Bridges in W. Kentucky
- ▶ Remote Sensing Technology for Bridge Structures
- ▶ Multi-Barge Flotilla Impact on Bridges
- ▶ Seismic Evaluation of Bridges on W. Ky. Parkways
- ▶ Bridge Retrofit Using FRP Cloth
- ▶ Bridge Management System Calibration and Testing
- ▶ Coatings and Sealants to Address Bridge Concrete Deterioration
- ▶ Disposal of Bridge Paint Debris

### Highlighted Project: Carbon Fiber Fabric Strengthening of the Carter County Bridge

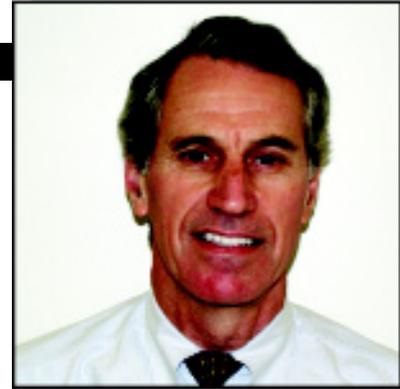
Advanced carbon fiber reinforced polymer (CFRP) composites, used in the aerospace industry (e.g. stealth bomber), hold promise for highway structures. The material has a high strength to low weight ratio and is resistant to corrosion and chemical attack. Although the CFRP material is very expensive, its application as part

of a retrofit system in bridges is proving to be feasible.

A prime example is the retrofit of a KY 3297 Bridge in Carter County. The spread box beams had severe cracks which would traditionally require the replacement of the entire superstructure at a cost of approximately \$600,000 (in addition to the inconvenience for the traveling public). The bridge was repaired by using CFRP fabric applied over the cracks in a manner similar to the application of wall paper by KTC researchers. The cost of the retrofit was \$100,000.



After almost four years of monitoring the bridge there has been no movement in the cracks: the retrofit has been a solid success.



## MAJOR PROJECT ACTIVITY FOR 2005

- ▶ Effect of Curve Warning Signs on Speed
- ▶ Evaluation of Auto Incident Recording System
- ▶ Review of KRS Traffic Provisions and Kentucky Drivers Manual
- ▶ Safety and Capacity Evaluations of Kentucky Interstates
- ▶ Design Speed, Operating Speed and Speed Limits Analysis
- ▶ Evaluation of Work Zone Safety Operations
- ▶ Access Management Guidelines
- ▶ Implementation Support for Access Management
- ▶ Safety Impacts of Design Element Trade-Offs
- ▶ Driver Behavior and Speeds
- ▶ Fatal Crash Trends and Countermeasures

## Highlighted Project: Evaluation of Auto Incident Recording System

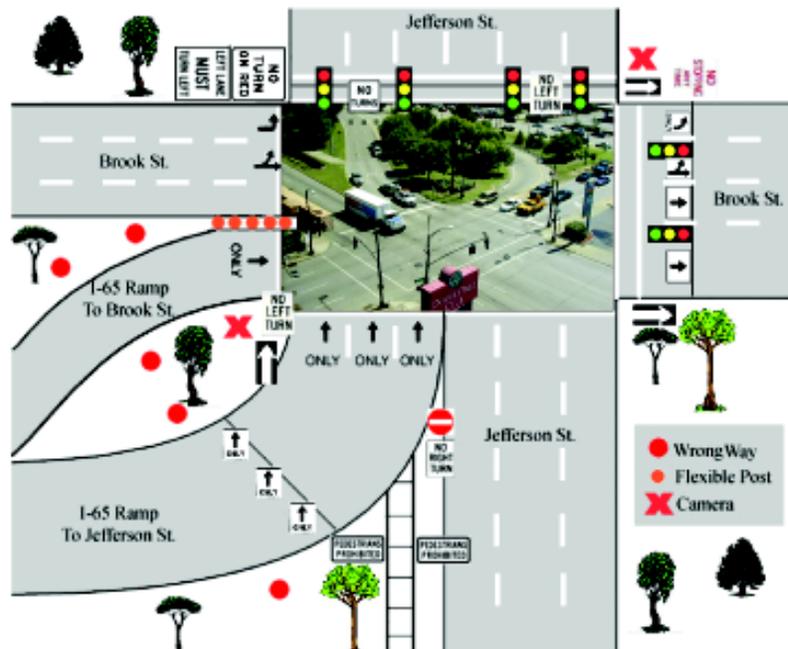
The Auto Incident Recording System (AIRS) is a sound actuated video recording system. It automatically records potential incidents when sound is detected ( e.g., horns, clashing metal, squealing tires). The recording system identifies patterns of crashes at intersections using two video cameras and two directional microphones. Steps to evaluate system effectiveness included:

- ▶ Review videoed incidents and near-incidents
- ▶ Compare police crash reports to videos
- ▶ Complete a traffic conflict investigation

Results from the Louisville intersection evaluation indicate that AIRS is an efficient method of documenting crashes. Other findings include:

- ▶ Efficiency is limited by number of false incidents identified
- ▶ Intersection improvements made as a result of AIRS data reduced crashes
- ▶ Crash savings in one year would exceed cost of AIRS installation

However, an alternative analysis method recommended for consideration is the intersection safety audit process.





## Planning and Systems Analysis

**TED GROSSARDT, PROGRAM MANAGER**

### MAJOR PROJECT ACTIVITY FOR 2005

- ▶ Statewide Planning Scenario Synthesis (Congestion)
- ▶ Documentation for Project Payout Schedule
- ▶ Public Involvement Support for Louisville Bridges Project
- ▶ Historic Farms of the Bluegrass
- ▶ Strategic Planning Support for LexTran
- ▶ Use of Visualization to Design Noise Walls
- ▶ Measuring the Value of Environmental Amenities
- ▶ Land Use and Transportation Model
- ▶ Statewide Citizen's Transportation Preferences
- ▶ Organizational Study Selected DOT's

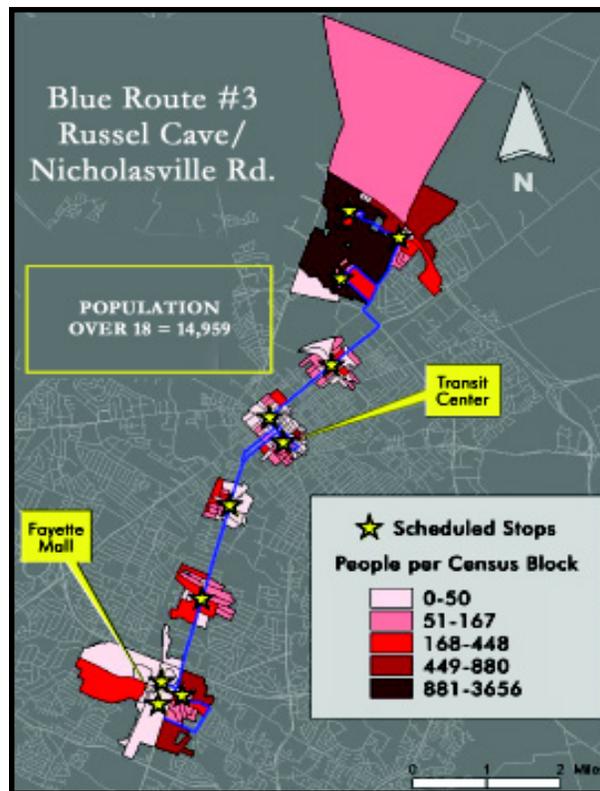
### Highlighted Project: Strategic planning Support for LexTran

Lexington's public transportation provider, LexTran, was recently faced with a financial crisis and management transition. It sought

the assistance of the Kentucky Transportation Center for strategic planning and visioning. KTC, with funding from the Kentucky

Transportation Cabinet, assisted in several ways:

- (1) facilitated public meetings to explore rider/stakeholder attitudes;
- (2) compared LexTran to similar providers (efficiency and funding);
- (3) produced a GIS database for analysis of proposed routes; and
- (4) prepared briefings on LexTran's situation for public education.



The public was informed of LexTran's high level of operational efficiency and comparative lack of resources in advance of the dedicated tax referendum. Lexington voters passed the referendum and LexTran is now financially solvent and has adequate tools to plan and analyze routes.

## Financial Analysis

**MERL HACKBART, PROGRAM MANAGER**

### MAJOR PROJECT ACTIVITY FOR 2005

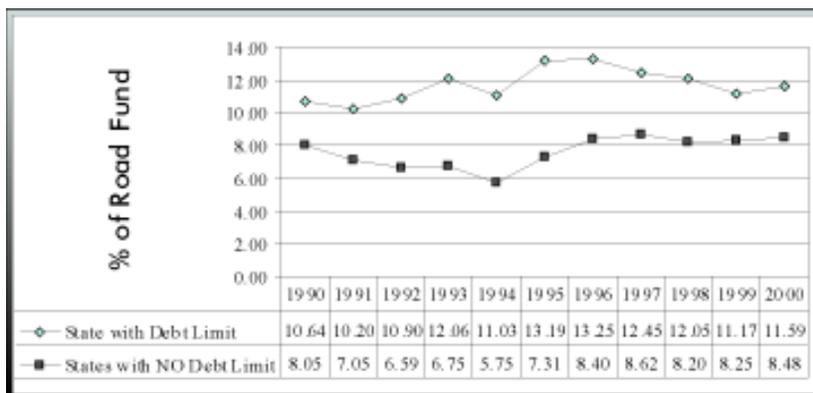
- ▶ Long-Term Options for Enhancing Transportation Finance
- ▶ Impact of State Road Fund Debt Limits

### Highlighted Project: Impact of State Road Fund Debt Limits

States have been gradually increasing their reliance on debt financing to meet transportation funding needs. This has been driven by the slow growth of revenue sources and resistance

to tax increases. As a result, state officials have shown greater interest in debt management practices and debt limit policies. Confirming and expanding on a previous study, research found

that states with debt limit policies have, on average, higher ratios (7.4% to 9.6% higher) of debt service to total revenue than states without debt limit policies. As state debt levels are a primary factor considered by credit rating agencies in setting bond ratings, many states have established debt limits to ensure compliance with rating agency expectations. It is suggested that states establish debt limits and pursue active debt manage policies to enhance their credit standing and reduce the cost of capital.



## Environmental Analysis

**RAY WERKMEISTER, PROGRAM MANAGER**

### MAJOR PROJECT ACTIVITY FOR 2005

- ▶ Recycling of Environmental Materials
- ▶ Construction Surplus Disposal

Additional environmentally related projects appear in other program areas. This is a new program emphasis area for the center.





## Technology Transfer

**PATSY ANDERSON, PROGRAM MANAGER**

The Technology Transfer (T<sup>2</sup>) Program serves as Kentucky's Local Technical Assistance Program (LTAP). T<sup>2</sup> provides workshops and training events, how-to manuals, expert advice, legislative and regulatory news, on-site technical assistance and access to the only transportation library in the state. The Federal Highway Administration's LTAP program, the Kentucky Transportation Cabinet and the University of Kentucky are the funding sources for the program.

T<sup>2</sup> had the opportunity to work with the Lincoln Trail Area Development District, the Kentucky Transportation Cabinet and the Federal Highway Administration to conduct its Roads Scholar and Road Master Training Programs as part of the first phase of the *Career Pathways to Highways* project.

This project is an intense twenty-two weeks of skilled training for interested participants including those that are under employed, unemployed and/or low-income individuals. The purpose of this project is to create a career pathway for qualified individuals to work in the transportation industry.

In February 2005, T<sup>2</sup> began a "Safety Circuit Rider Program" funded by the Federal Highway Administration's Office of Safety and in partnership with the Kentucky Transportation Cabinet, Local Governments and the Area Development Districts. This project focuses on crashes on rural two-lane roads. Fifteen counties and cities have participated in the program and over fifty "Low-Cost, Safety Improvement Projects" have been completed in these areas. Six "Low-Cost, Safety Improvement" workshops were held across the state for over 100 local and state government employees.

T<sup>2</sup> assisted in the presentation of the 2005 Lifesavers Conference. This three-day event was attended by 307 participants and 30 exhibitors. This conference focused on providing the latest safety information to those individuals charged with reducing the number of crashes and fatalities on Kentucky's



roadways. The conference highlighted successful programs and drew attention to emerging safety issues.

Each year the LTAP community holds regional meetings around the United States and the Ky T<sup>2</sup> had the opportunity to host the regional meeting for the southeastern states. There were over 50 participants from 11 states discussing the business of doing technology transfer, identifying problems, and sharing success stories.

T<sup>2</sup> conducted Road Surface Management System (RSMS) and Sign Inventory Management System (SIMS) hands-on workshops for local government agencies. RSMS offered agencies an effective way to identify and to prepare plans and budgets. SIMS provided effective sign management.

T<sup>2</sup> is always looking for ways to work with our partners. We worked with the Kentucky APWA Chapter to create a strategic plan and assisted in the development of four focus areas: membership, education, marketing, and finance. T<sup>2</sup> also assisted the APWA Bluegrass Branch with a satellite downlink of "Live from the APWA North American Snow Conference – Training First-Rate Snowfighters."

This fiscal year, T<sup>2</sup> developed a new course in cooperation with the Plantmix Asphalt Industry of Kentucky (PAIKY) titled "Road Surface Management for Local Agencies." This one-day course assisted local government agencies in understanding the benefits of managing their assets and how important it is to implement a system to determine pavement conditions and prioritize maintenance and rehabilitation.

- ▶ Presented 152 training events attended by 4,570 transportation workers.
- ▶ Conducted the Asphalt Certification program leading to the certification of 36 new technologists and the recertification of 19 technologists.

- ▶ Presented the Asphalt Field Technician Certification resulting in 162 individuals earning their certifications.
- ▶ Issued quarterly newsletter.
- ▶ Added 620 items to the Library holdings and loaned 1022 library materials, including 341 videos.
- ▶ In 2005, the Library produced a new *Video Catalog* and *Safety Catalog* for the Safety Circuit Rider Program.



## Research Reports Published During FY 2004-2005

- 2005
- 2000
- 1995
- 1990
- 1985
- 1980
- KTC-05-01/SPR270-03-11    **"Swelling Pavement: Ky 499 Estill County,"** Tony L. Beckham and Tommy C. Hopkins, March 2005.
- KTC-05-02/SPR285-05-1F    **"Review of Traffic Provisions of KRS/KAR and Kentucky Drivers Manual,"** Kenneth R. Agent and Jerry G. Pigman, March 2005.
- KTC-05-03/SPR227-01-1F    **"Kentucky Teotechnical Database,"** Tommy C. Hopkins, Tony L. Beckham, Liecheng Sun and Bill Pfalzer, March 2005.
- KTC-05-04/SPR180-09-1F    **"Examination of Economical Methods for Repairing Highway Landslides,"** Tommy C. Hopkins, Tony L. Beckham and Bixain Ni, April 2005.
- KTC-05-05/SPR228-01-11    **"Reduction of Stresses on Buried Rigid Highway Structures Using the Imperfect Ditch Method and Expanded Polysterene (Geofoam),"** Charlie Sun, Tommy C. Hopkins and Tony L. Beckham, April 2005.
- KTC-05-06/UI56-04-1F    **"Safety and Capacity Evaluation and Analysis for Interstates in Kentucky,"** Adam Kirk, Jerry G. Pigman, Kenneth R. Agent and Barry House, April 2005.
- KTC-05-07/PL5-03-1F"    **Speed Estimation for Air Quality Analysis,"** Mei Chen and Huafeng Gong, May 2005.
- KTC-05-08/SPR228-05-1F    **"Development of Kentucky's Highway Incident Management Strategic Plan,"** Monica L. Barrett, Joseph D. Crabtree and Jennifer R. Walton, May 2005.
- KTC-05-09/SPR277-03-1F    **"Evaluation of Auto Incident Recording System (AIRS),"** Eric R. Green, Kenneth R. Agent and Jerry G. Pigman, May 2005.
- KTC-05-10/FRT104-00-1F    **"Baseline Modeling of the Maysville Cable-Stayed Bridge over the Ohio River,"** I. E. Harik, J. D. Hu, S. W. Smith, W. X. Ren, T. Zhao, J. E. Campbell and Clark Graves, July 2005.
- KTC-05/11/SPR288-05-2F    **"Outsourcing of KyTC Project Delivery Functions,"** Donn E. Hancher, April Brenneman and Paul M. Goodrum, June 2005.
- KTC-05-13/FRT141-04-1F    **"Pavement/Sub-Grade Condition Assessment I-65 Approximate Milepost 97.5 to 102.5 ("Transition from Asphalt to Concrete) to ("Ky 313 Overpass"),** Brad Rister and Clark G. Graves, June 2005.
- KTC-05-14/SPR283-04-1F    **"Innovative Rapid Construction/Reconstruction Methods,"** Paul M. Goodrum, Uinggang Wang, Philippe C. Fenouit, and Chris N. Jones, June 2005.

- KTC-05-15/SPR280-04-1F **"Evaluation of Methods to Limit the Time Taken to Investigate Crash Sites,"** Jennifer R. Walton, Monica L. Barrett, and Kenneth R. Agent, June 2005.
- KTC-05-16/SPR302-04-1F **"Enhancing Kentucky's Transportation Funding Capacity: A Review of Six Innovative Financing Options,"** Merl Hackbart, Juita-Elena (Wie) Yusuf, Michael J. Moody, and Candice Y. Wallace, June 2005.
- KTC-05-17/TA5-04-2F **"The Impact of State Road Fund Debt Limits: An Empirical Analysis,"** Michael Moody and Merl Hackbart, July 2005.  
(See KTC-04-16)
- KTC-05-18/KSP1-05-11 **"Evaluation of Kentucky's Buckle Up Kentucky: It's the Law and It's Enforced 2005 Campaign,"** Kenneth R. Agent, Eric R. Green and Ronald E. Langley, July 2005.
- KTC-05-19/KSP2-05-1F **"Analysis of Traffic Crash Data In Kentucky (2000-2004),"** Eric R. Green, Kenneth R. Agent, Jerry G. Pigman, and Monica L. Barrett, August 2005.
- KTC-05-20/SPR259-03-1F **"Effect of Warning Devices on Curve Operating speeds,"** Adam Vest, Nikiforos Stamatiadis, Adam Claytopn, and Jerry g. Pigman, August 2005.
- KTC-05-21/SPR238-02-1F **"Bearing Capacity Analysis and Design of Highway Base Materials Reinforced with Geofabrics,"** Tommy C. Hopkins, Liecheng Sun, and Michael Slepak, August 2005.
- KTC-05-22/KSP1-05-2F **"2005 Safety Belt Usage Survey in Kentucky,"** Kenneth R. Agent and Eric R. Green, August 2005.
- KTC-05-23/TA12-04-1F **"Meeting Kentucky's Transportation Needs and Priorities: Citizens Perceptions and Recommendations,"** Don Hartman, Merl Hackbart, Juita-Elena (Wie) Yusuf, and Candice Y. Wallace, August 2005.
- KTC-05-24/FR133-03-1F **"LexTran Support Project: Strategic Planning Support for LexTran Visioning,"** Lenahan O'Connell and Ted Grossardt, September 2005.
- KTC-05-25/RSS8-02-1F **"Long-Term Maintenance Needs Planning,"** Lenahan O'Connell, Brian Howell, and Doug Kreis, September 2005.
- KTC-05-26/SPR242-02-1F **"Analysis of Procurement Processes for Intelligent Transportation Systems,"** Joseph Crabtree and Chris Frost, September 2005.
- KTC-05-27/SPR229-02-1F **"Resilient Modulus of Crushed Aggregate Bases,"** Tommy C. Hopkins, Tony L. Beckham, and Charlie Sun, September 2005.

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## Research Reports Published During FY 2004-2005 (cont.)

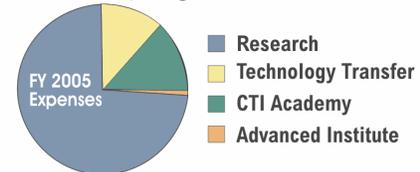
- KTC-05-28/SPR239-01-1F **"Corrosion Evaluation of Mechanically Stabilized Earth Walls,"** Tony L. Beckham, Charlie Sun, and Tommy C. Hopkins, September 2005.
- KTC-05-29/SPR267-02-1F **"Identification of Pavement Distress in Kentucky,"** Tim Scully, David Allen, and R. Clark Graves, September 2005.
- KTC-05-30/SPR266-02-1F **"Evaluation of the Current State-of-the-Art in Pavement Profiling for Use in Roadway Design,"** R. Clark Graves and David Allen, September 2005.
- KTC-05-31/SPR232-01-1F **"Utilization of Index Stations for Prediction of Interstate Traffic Volumes,"** R. Clark Graves and Jerry G. Pigman, September 2005.
- KTC-05-32/SPR303-05-1F **"Statewide Planning Scenario Synthesis: Transportation Congestion Measurement and Management,"** Doug Kreis, Brian Howell, and Lenaham O'Connell, September 2005.

### Financial Snapshot

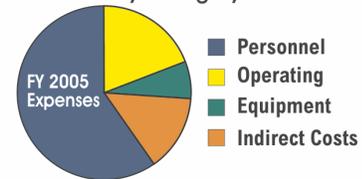
FY 2005 Expenditures\*

Program Area Category	Research**	Technology Transfer	CTI Academy	Advanced Institute	Total
Personnel	3,274,530	454,053	546,669	60,000	4,335,252
Operating	746,157	425,840	238,279	0	1,410,276
Equipment	498,078	4,302	0	0	502,380
Indirect Costs	831,079	9,665	185,293	0	1,026,037
<b>Total</b>	<b>5,349,844</b>	<b>893,860</b>	<b>970,241</b>	<b>60,000</b>	<b>7,273,945</b>

Distribution by Program Area



Distribution by Category



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

\*\*The research/study program for FY05 consisted of over 100 projects conducted for the following agencies: the Kentucky Transportation Cabinet, Kentucky State Police, USDOT/FHWA, USDOT/FMCSA, NSF, TRB/NCHRP, NORPASS, Lexington-Fayette Urban County Government, and various other public jurisdictions. Some work is done in cooperation with other universities including: Northwestern University, University of Louisville, University of Tennessee, and Calspan-University of Buffalo Research Center and also in partnership with firms and organizations such as HMB Professional Engineers, Wilbur Smith and Associates, Northrup Grumman, and the Asphalt Institute.

\*\*\*Research lab equipment includes a one time purchase @ \$358,430 for weigh station equipment

## New Kentucky Highway Research Projects for 2005/2006

- ▶ Speed Estimation and Data Base Program (06-305)
- ▶ High Level Benefit Cost Analysis (06-306)
- ▶ Extended Use Investigation of Ground Penetrating Radar (06-307)
- ▶ ESAL Forecasting Estimation Update for Superpave (06-308)
- ▶ Evaluation of Extended Truck Weight Impacts (06-309)
- ▶ Diamond Grinding Effects on Pavement Performance (06-310)
- ▶ Best Practices Tracking for On-Site Erosion Control (06-311)
- ▶ Environmental Content for Construction Inspection Training (06-312)
- ▶ Stockpiling Potential for Hydrated Lime-Soil Mixture (06-313)
- ▶ Economic Costs of Low Seatbelt Usage In Kentucky (06-315)
- ▶ Low-Cost Safety Measures at Signalized Intersections (06-316)
- ▶ Traffic Control for Emergency Responders (06-317)
- ▶ Development of Traffic Sign Inventory System (06-318)
- ▶ Evaluation of Pavement Rumble Strips Effectiveness (06-319)
- ▶ Update of Kentucky's Statewide ITS Architecture (06-320)
- ▶ Incident Management Strategic Plan Recommendations (06-321)
- ▶ Remote Monitoring of Bridge Piers for Barge impacts (06-322)
- ▶ Improved Safety of Construction/Maintenance Workers (06-323)

### Advisory Board

<b>MEMBER</b>	<b>AGENCY REPRESENTED</b>
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<b>R. T. "Tucker" Daniel</b> ..... <i>Johnson County Judge/Executive</i>	Kentucky Association of Counties
<b>Jeffrey Garrison</b> ..... <i>The Walker Company</i>	At-Large Member
<b>Thomas Holocher</b> ..... <i>Mayor, City of Ft. Mitchell</i>	At-Large Member
<b>Buddy Smith</b> ..... <i>McCracken County Project Engineer and Advisor</i>	At-Large Member

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If you have a transportation issue that needs to be studied or a research project idea, please let us know. You can call any staff person or simply go to our web site's home page and click on the [research idea button](#). You will be asked to provide a brief statement about the issue or idea and some contact information. **Give it a try!**





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