EXCELLENCE IN MOTION

KYTC manages more than 27,000 miles of highways, including roughly 20,500 miles of secondary roads, 3600 miles of primary roads, and more than 1,400 miles of interstate and parkway miles.

WHO WE ARE

The Kentucky Transportation Cabinet (KYTC) is an executive branch agency responsible for delivering a safe, efficient, environmentally sound and fiscally responsible multi-modal transportation system that encourages economic opportunity and enhances the quality of life in Kentucky. KYTC connects all corners of the Commonwealth through maintaining safe and reliable roads, bridges, airports, railways, waterways, and walkways. They provide comprehensive transportation services, including direction for 230 licensed airports and heliports and oversight of all motor vehicle and driver’s licenses for more than three million drivers in the Commonwealth.

The Kentucky Transportation Center (KTC) at the University of Kentucky serves as the research arm of the Cabinet. The research program conducted at KTC began in 1981 when the Kentucky Department of Highways transferred the Division of Research to UK’s College of Engineering. In 1988, UK combined the transportation research program with the federally-funded Local Technical Assistance Program (LTAP) to form what is known today as the Kentucky Transportation Center.

WHAT WE DO

KTC delivers groundbreaking research, pioneering technology transfer, and timely educational outreach to its partners in local, state, and national transportation communities. KTC not only assists the Cabinet in delivering projects in the state highway plan, but they also have the resources to perform cutting-edge research on all modes of transportation. The Center’s research addresses many of today’s most pressing transportation challenges, from roadside safety and bridge rehabilitation, to policy analysis and efficient construction and maintenance practices.

Spread across 12 program areas, KTC’s researchers embrace a multidisciplinary approach to problem solving, which yields innovative solutions, high-quality training, and unparalleled customer service. Through partnerships with KYTC and other transportation agencies and stakeholders, KTC’s practical yet rigorous solutions help build and maintain the nation’s roadways and infrastructure.

OUR PROGRAM AREAS

Bridge Preservation: There are over 14,000 bridges in Kentucky, and with many of them deteriorating, it is critical to identify and implement strategies to prolong their service lives. KTC’s Bridge Preservation program investigates techniques and materials used to repair, reinforce, and preserve the structural elements of bridges. Key research topics include the effectiveness of protective coatings for concrete and steel, spot painting techniques, remediating chloride damage on steel bridges, the use of nondestructive technologies to inspect bridges, and holistic bridge maintenance and preservation strategies.

Construction Engineering and Project Management: The mission of KTC’s Construction Engineering and Project Management program is to develop innovative methods, technologies, and strategies to improve the delivery of infrastructure projects. With a focus on safety, cost, schedule, and quality, research takes place on topics such as construction staffing issues and strategies, optimizing the utility coordination process, the use of alternative contracting, and transportation agencies’ use of mobile information technologies.

Intelligent Transportation Systems: The Intelligent Transportation Systems program integrates advanced technologies into commercial vehicle and other transportation networks for greater efficiency and improved safety. Researchers perform studies of virtual weigh station technology and develop traffic control procedures for emergency responders. They assist KYTC with
implementation and maintenance of the award-winning Kentucky Automated Truck Screening (KATS) systems.

Traffic and Safety: KTC’s Traffic & Safety program collaborates with numerous federal, state, and local agencies to achieve their mission of improving the safety of transportation networks. Leveraging its multidisciplinary expertise, researchers investigate a wide range of topics, from commercial vehicle safety and seatbelt usage rates, to improving traffic signage and studying the effects of climate change and severe weather on critical infrastructure. The group compiles annual crash data reports, applies Geographic Information Systems (GIS) to traffic safety issues, and collects and analyzes data for FHWA’s Highway Safety Improvement Program.

Technology Transfer: Kentucky’s T2 Program is designated a Local Technical Assistance Program (LTAP) by the Federal Highway Administration. Each year, KTC presents an average of 320 workshops attended by more than 8,000 participants. Training topics include work zone safety, pesticide application, asphalt qualification, low-cost roadway safety improvements, and highway maintenance. They also provide knowledge exchange through how-to manuals, expert advice, legislative and regulatory news, and on-site technical assistance.

Special Projects and Initiatives: KTC’s Special Projects and Initiatives program brings together researchers from around the Center to respond to a wide variety of research opportunities that may not be addressed by other program areas. They oversee projects focused on a range of complex transportation topics – from project management and sustainable infrastructure to environmental mitigation, hazardous materials tracking, and supply chain security.

Pavements, Materials, Geotechnology, and Infrastructure Assessment: KTC’s Pavements, Materials, Geotechnology, and Infrastructure Assessment program is dedicated to improving the durability, resiliency, and service lives of roadways, highways, and bridges. Researchers look for improved methods of pavement, asphalt, and infrastructure assessment and identify non-destructive technologies that can be used to model pavement performance and inspect the quality, thickness, and density of pavement. They explore quality control, materials handling, and methods of asset inventory. The group played a leading role in the development of guidance for pavement design.

Structures: KTC’s Structures program uses field testing and finite element modeling to evaluate and monitor the condition of bridges and other structures. Researchers develop strategies to repair and strengthen new and existing structures with novel, high-performance materials, thus playing a critical role in preserving the nation’s infrastructure. The group developed the CatStrong family of products – lightweight carbon fiber reinforced products designed for quick application, which reduces the cost and labor necessary to complete bridge maintenance projects.

Economics, Finance, and Policy: With shrinking transportation budgets, it is imperative for federal, state, and local agencies to stretch their dollars and maximize returns on investment. KTC’s Economics, Finance, and Policy program collaborates with these agencies – as well as multiple colleges within the University of Kentucky – to understand the economic implications of policy proposals and emerging technologies, recommend best practices for funding transportation projects, conduct financial data analysis, and examine legislative initiatives.

Project Development: Developing successful highway projects requires sophisticated, multi-year planning efforts. KTC’s Project Development program specializes in helping state transportation agencies improve project development workflows and project delivery, from initial project concept through project letting. Their activities include training pre-construction project managers on the challenges of project development, right-sizing construction projects, optimizing surveying technologies, and developing a course focused on Americans with Disability Act (ADA) compliance.

Planning: KTC’s Planning program leverages interdisciplinary perspectives to support and improve the planning processes used by transportation agencies. Harnessing the knowledge of engineers, economists, geographers, urban planners, policy analysts, designers, landscape architects, and other experts, researchers formulate unique solutions to critical planning issues. Project work targets data processing and collection for decision making, highway and railroad operations and infrastructure, traffic monitoring and modeling, safety planning, asset management, and performance assessment.

Education: KTC has a long history of providing workshops and training courses for professionals in consulting firms and state transportation agencies, and their Technology Transfer program offers many short courses for highway personnel employed at local agencies as part of its workforce training program. The Center also supports Civil Engineering graduate and undergraduate students by providing numerous transportation research opportunities.