

Profile of an Organization

University of Tennessee Transportation Center

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The following is part of an occasional series appearing in TR News in which transportation research organizations are profiled. The organization, activities, and goals of the University of Tennessee Transportation Center are described here.

In 1952 the University of Tennessee entered into a cooperative agreement with the then Tennessee Highway Department to manage the department's highway research program. The activity stemming from this agreement eventually led in 1970 to the establishment of the University of Tennessee Transportation Center (UTTC) on the Knoxville campus. From its highway-based origins, UTTC has developed into a nationally known multimodal transportation research institution.

Today UTTC, under Director Stephen H. Richards, maintains its civil engineering strengths and continues its relationship with the Tennessee Department of Transportation (Tenn DOT). However, civil engineering skills are now supplemented with planning; geography; computer science; business; archeology; public administration; education; and mechanical, electrical, and industrial engineering skills. UTTC staff includes the entire faculty of the University of Tennessee, with mechanisms in place to quickly add any needed discipline to a research team. In addition, sponsorship of UTTC research has expanded to include all



UTTC Director Stephen Richards (left) and Assistant Director John Tidwell review pedestrian signs.

levels of government as well as a broad base of industry support.

The past 10 years has been a time of exceptional growth for UTTC, which has more than 400 projects under way and \$20 million in grant and contract funding.

UTTC's past accomplishments include the following:

- Establishment of the Knoxville Commuter Pool, the first ridesharing agency in the nation;
- Development of the statewide Tennessee Vans program, a commuter van-pool service operated by UTTC and Tenn DOT;
- Occupant restraint research for Tenn DOT's Governors' Highway Safety Program and the National Highway Traffic Safety Administration;
- A seven-year study leading to the development and field testing of innovative

Safety and Operations Division

The Pedestrian Safety Institute is conducting a study to determine driver and pedestrian comprehension of pedestrian-related laws and traffic control devices. The study is funded by the American Automobile Association's Foundation for Traffic Safety. Data are being gathered through drivers' license examining stations in all states.

traffic control devices for railroad grade crossings;

- Research and training in work zone traffic control and safety;
- Studies on the benefit-cost of statewide vehicle safety inspection laws;
- Cooperative studies with the General Motors Saturn Division in Springhill, Tennessee;
- Transportation planning software for military air and land traffic and a number of related military projects. These logistic skills were recently applied by UTTC under contract with the Department of Defense during Desert Storm;
- A successful highway engineering minority training project initiated in 1986 in conjunction with Shelby State Community College in Memphis, Tennessee; and
- Development of the National Truck/Bus Accident Program for the National Governors' Association and the Federal

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Tennessee Vans vehicle.

Policy and Services Division

Tennessee Vans is a statewide commuter vanpool service sponsored and operated by UTTC and Tenn DOT. The service was initiated in 1990 with funds of approximately \$1 million in capital and operating grants from Tenn DOT. The vehicle lease and purchase options are designed as revolving fund programs.

Highway Administration (FHWA). A videotape and training materials were developed to assist law enforcement officers across the nation in the investigation of truck accidents.

UTTC's Programs

UTTC has a \$4 million program with 116 faculty, staff, and students participating in more than 50 research projects. This large program is administered through a unique organizational structure.

Organization

UTTC operates under the Office of Research Administration at the University of Tennessee's main campus at Knoxville. This enables UTTC to cross college and departmental lines to access the expertise available throughout the University of Tennessee system. In addition to its Knoxville offices, UTTC has established satellite offices at Tenn DOT's headquarters in Nashville, the university's Space Institute at Tullahoma and the Pellissippi Research

Center at Oak Ridge, and the Oak Ridge National Laboratory. UTTC also works closely with the university's other research centers and Centers of Excellence.

Goals

UTTC has established the following goals:

- Conduct a program of research and continuing education in transportation that is nationally recognized for its excellence, comprehensiveness, innovation, productivity, and leadership;
- Develop and sustain the technical expertise basic to high-quality transportation research by the university's students and faculty;
- Support and strengthen the university's academic program in transportation; and
- Provide transportation research and public service to government and industry in Tennessee, the southeast, and the nation.

To achieve these goals, UTTC has set up four major divisions, Safety and Operations, Policy and Services, Engineering and

Environment, and Systems Analysis and Logistics. Each division is staffed by individuals with sufficient experience and expertise to produce quality research and training in the specialty area. The Training Section uses staff from all four UTTC divisions and the University of Tennessee faculty to develop training courses for transportation professionals.

UTTC, as a member of a three-university consortium, operates one of the four National Maritime Enhancement Centers. The UTTC center specializes in inland waterways research and issues. UTTC is also part of the Southeastern Transportation Center, which is one of the 10 U.S. Department of Transportation-sponsored university transportation centers. UTTC projects include research in intelligent vehicle-highway system applications, suburban mobility and congestion management, public transportation, environmental impacts of highway projects, and bridge structural design.

Current Activities

UTTC's current activities include both on

Systems Analysis and Logistics Division

UTTC recently opened a Geographic Information Systems (GIS) Laboratory at its Pellissippi research facility. This state-of-the-art facility features the latest in hardware and software solutions for transportation-related GIS.

The GIS laboratory is currently configured with Sun Workstation servers and PC development platforms networked by Ethernet to each other and to the central university mainframe computers. Software systems available for application development include Arc/Info V6.01 with GRID, TIN, NETWORK, and COGO extensions; PC Arc/Info V3.4; TransCAD V2.1 Transportation Workstation software by Caliper Corporation; and the Geographic Resource Analysis Support System V4.0 (GRASS) developed by the U.S. Army Corps of Engineers.

Julian Ray at work in the Geographic Information Systems Laboratory.



Engineering and Environment Division

UTTC manages the Tennessee Transportation Assistance Program. TTAP provides training, technical assistance, and other services to Tennessee's local governments.



Tennessee Transportation Assistance Program consultant Thomas Copas (second from left) directs pavement repair demonstration.

going programs, along with research and training projects that have a finite life. Continuing activities include the following:

- Tennessee Transportation Assistance Program (TTAP) is the Local Transportation Assistance Program technology transfer program for the state of Tennessee. Memphis State University and Tennessee Technological University are also involved in TTAP, with UTTC as the lead organization.

- Knoxville Commuter Pool serves more than 15,000 commuters.

- The Tennessee Vans Program provides vans for vanpool operation through a continuing Tenn DOT/Federal Transit Administration grant.

- The Tennessee Traffic Safety Resource Center provides training and materials on seat belt use, drunk driving prevention programs, and other traffic safety activities in Tennessee. The center serves as a resource for highway safety information and materials.

- The Pedestrian Safety Institute serves as a clearinghouse for information and

training in pedestrian safety. It also conducts research into ways to improve pedestrian safety.

- The Institute for the Study of Human Mobility Systems conducts basic and applied research on issues, problems, and solutions concerning the design of transportation systems to achieve human mobility goals.

Current research areas include

- Pedestrian safety,
- Work zone traffic control,
- Large truck safety,
- Suburban mobility,
- Suburban highway design,
- Commuter transportation services,
- Technology transfer for small urban and rural geographic information systems,
- Transportation system modeling and analysis,
- Occupant restraint,
- Environmental impact assessment at highway construction sites,
- Innovative technologies related to high-speed rail, and
- Grade crossing safety.

Training and Education

UTTC provides research assistant positions and office space for graduate students interested in pursuing a career in transportation engineering. The students are assigned to various research projects that may lead to work on a thesis or dissertation.

UTTC also provides short courses through its training unit such as traffic signal management, geometric design, roadside design, and pedestrian safety. These courses are an excellent medium for technology transfer in all areas of transportation.

The Future

As the United States moves toward the 21st century, the need for innovative and quality transportation research has never been greater. Safety, productivity, efficiency, and cost-effectiveness in transportation will be the important issues of the next century. Understanding this, UTTC is poised to make significant contributions, not only in future research, but in transportation education and public service.

Program Director Darcy Sullivan speaking at UTTC course on traffic signal management.

Training Section

The Training Section uses staff from all four UTTC divisions and the University of Tennessee faculty to develop training courses for transportation professionals. Those courses are presented on campus at the university's conference center or other sites. A training course brochure has been produced and courses are currently being scheduled.

