Established in 1978, the University of North Carolina Institute for Transportation Research and Education (ITRE) is recognized by state and local government agencies as a leading resource in transportation research and technical assistance.

As a unit of North Carolina State University, ITRE provides research assistance and project administration for the 16-campus UNC system and Duke University, as well as for state government agencies.

ITRE shares with North Carolina A&T State University lead institute responsibilities for the Southeastern Transportation Center, a consortium that pursues regional approaches to transportation research and training challenges. Accordingly, ITRE provides administrative coordination for cooperative research and teaching activities at STC member schools: Georgia State University, Vanderbilt University, the universities of Florida, Kentucky, Tennessee, and UNC-Charlotte, UNC-Chapel Hill, NC Central University, NC State University, NC A&T State University, and Duke University.

ITRE also serves as North Carolina’s Technology Transfer Center, a federally funded technical assistance program focused on local government transportation needs and issues.

ITRE assists local government and state government agencies in meeting a wide range of transportation challenges through the application of research. This effort is coordinated through ITRE’s program areas: Highways, Local Governments, Pupil Transportation, Geographic Information Systems, and Public Transportation.
These are exciting times at ITRE. We have launched two important new research centers. We have strengthened our ties with transportation faculty on the various campuses. We have reorganized the Southeastern Transportation Center. We have a new administrative home at NC State University. We have even changed our logo!

These changes have a purpose: to better serve our two client groups. One client group is the transportation community—the many public agencies and private firms that rely on ITRE for professional research and training services. We value the trust of these clients, and we shall continue to change to improve our service to them.

We are equally dedicated to our second client group: the transportation faculty on the various campuses of the University of North Carolina and Duke University. We now provide a range of services to these faculty, from identifying sources of funding to preparing proposals and reports. ITRE strives to enhance the success of our constituent campuses in carrying out nationally competitive research.

The new spirit of partnership at ITRE is perhaps best illustrated by our two new research centers: the Center for Transportation and the Environment (CTE) and the Transportation Materials Research Center (TMRC). Each is a partnership, and each is intended to build on existing research strengths to achieve national prominence.

CTE is a partnership between ITRE and the North Carolina Department of Transportation. Jointly funded by the US Department of Transportation and NCDOT, CTE will conduct cutting-edge research on mitigation of the impacts of transportation facilities on the environment. CTE is administered at ITRE and will involve all the campuses that we serve. The director of CTE is Dr. John Fisher of NC State University.

TMRC is a partnership involving ITRE, NC State University, and the North Carolina Aggregates Association. It is jointly funded by ITRE—using funds from the US Department of Transportation—by the North Carolina Aggregates Association, and by NC State University. Directed by Dr. Paul Khosla of NC State University, TMRC will conduct research and technology transfer activities regarding a variety of materials for transportation pavements and structures.

These changes are exciting. They mean building national prominence in areas that are already strong. They mean closer cooperation with campuses and transportation firms and agencies. Most of all, they mean that ITRE will be able to improve its services to the state and the nation.
The Southeastern Transportation Center (STC) is undergoing an exciting period of growth and transition. Its regional program activities of research, education, and technology transfer have evolved toward a single purpose: to train the transportation professionals of the 21st century.

To this end, in October 1991, the Center adopted as its new theme transportation safety. This theme is multi-modal in that it applies to both highway and public transportation. It encompasses such national and regional problems as reducing the incidence of highway injuries, improving the personal security of transit passengers and drivers, eliminating roadway work zone fatalities, reducing risks to pedestrians, improving the data on traffic accidents, and improving the safety of hazardous materials shipments.

Armed with a well-defined mission and theme, the Southeastern Transportation Center, a consortium of southeastern university transportation programs, is well on its way to achieving its goals of (1) becoming a national resource in transportation safety research, education, and technology transfer, and (2) expanding the region’s pool of transportation professionals to include more women and minorities.

STC is administered jointly by ITRE and North Carolina A&T State University. Sponsorship and funding for the Center’s activities are provided in part by USDOT, Research and Special Programs Administration, through a grant from the University Transportation Centers Program.

The most exciting feature of the regionwide Advanced Institute is its Internship Program. The STC Internship Program encourages undergraduate and graduate student interest in transportation and increases student exposure to transportation careers. Students are provided with a "real world" opportunity to obtain outstanding pre-professional training in the transportation field. Internship work activities may include developing transportation plans, planning road locations, implementing worker and passenger safety programs, and researching safety issues. Placement sites include local transit systems, state and municipal departments of transportation, private consulting firms, and university departments within the region.

STC is one of ten university transportation centers nationwide, established to advance US technology and expertise in transportation at university-level centers of excellence.

To accomplish its mission of training the transportation professionals of the 21st century, STC is establishing a single, regionwide Advanced Institute (AI), administered by NC A&T, comprising all STC member schools. The development of this regionwide AI is a novel approach toward providing students from the entire region with a stimulating educational experience which integrates the Center’s theme of transportation safety.
The success of the regionwide Advanced Institute depends on the participation of all the Center’s member schools. Their involvement enriches the Center’s activities and builds a strong foundation for meeting the region’s mobility challenges. The following universities participate in STC:

A Georgia State University
B NC A&T State University
C NC Central University
D NC State University
E UNC Chapel Hill
F UNC Charlotte
G University of Florida
H University of Kentucky
I University of Tennessee
J Vanderbilt University
K Duke University

Project Highlights:

- An Assessment of Crime Against Taxi Drivers and the Effectiveness of Countermeasures
  Principal Investigator: Dr. John Stone
  NC State University

- Commercial Motor Vehicle Driver Safety
  Principal Investigator: Dr. Arun Chatterjee
  University of Tennessee

- Identifying Hazardous Locations Using GIS
  Principal Investigator: Dr. Gary Spring
  NC A&T State University

- Analysis of the Perception of Personal Safety on Public Transit
  Principal Investigator: Dr. Julian Benjamin
  NC A&T State University

- Ceramic Road Striping Materials
  Principal Investigator: Dr. Charles Beatty
  University of Florida
Highway work zones, pavement maintenance and the professional development of traffic engineers do not readily spring to mind when one thinks about the safety and speed of a trip across town or across the state. It is only when a flagger slows traffic, a pothole jolts the wheels or poor road drainage creates a small flood that these seemingly abstract and mundane disciplines become real.

ITRE has emerged as a leader in providing technical assistance and education to state and local government agencies responsible for elements of highway infrastructure.

Through the programs that it conducts, ITRE’s Highway Program helps ensure that work zones are operated safely, that the maintenance of roads occurs in a timely manner and that roads are constructed correctly.

Project Highlights:

- **Work Zone Safety Training for North Carolina Municipalities**
  
  North Carolina League of Municipalities and North Carolina Governor’s Highway Safety Program

  Street and highway construction, maintenance and utility work zones are among the most hazardous places to work in the United States. Work zone accidents cause 700 deaths and 25,000 injuries to workers and drivers annually in the United States.

  Realizing that North Carolina’s municipalities, utilities and contractors face these risks, the sponsors and ITRE joined to develop a program that addressed worker safety and risk management issues. The primary objective of this effort was to develop and implement preventive measures that would reduce the risk of accidents.

- **Professional Development Program**
  
  Division of Highways (DOH), NCDOT

  Since 1985, ITRE has provided technical training support to DOH by developing and teaching the Professional Engineering Review, the Engineer-in-Training Review, and the Highway Engineering Concepts (HEC) courses. These courses provide instruction in the basic engineering principles as applied to highways, bridges, and drainage structures. While they are optional courses for DOH employees, these courses are used to enhance promotional consideration within DOH. Certain DOH upper management levels require professional engineering registration. Technical level employees desiring to move into the engineering levels are often requested by DOH supervisors to show technical competence by completion of the HEC course. These courses are available to NCDOT employees in transportation technician II level positions and up.

  In 1992, ITRE was selected to develop a training framework for the DOH in cooperation with the NCDOT Personnel Training Section. The training framework is part of an NCDOT program focused on upgrading the quality of work from DOH employees and ensuring that employees receive appropriate training as they move up within the organization. The framework enables supervisors to manage their employees’ training needs and track their progress. At each pay grade level, employees will have an opportunity to receive the training needed to increase their efficiency in producing work and in managing employees under their direction.

  In addition, ITRE is planning and developing courses for middle and senior-level managers and for employees below the technician level. Initially, ITRE developed and conducted two assessment surveys, analyzed the results, and recommended courses and curricula targeted to the two groups.
The DOH Training Steering Committee is using ITRE's report and recommendations as a guide to investigate the feasibility of the suggested training courses. As a result of this effort, ITRE developed and instituted the first series of new courses: (1) Communicating with the Public and the Media, (2) Fundamental Engineering Principles, (3) Plane Coordinate Utilization, (4) Strategic Management Forum, (5) Contract Administration, (6) Purchase Order Contract Administration, (7) Managing Employee Performance Workshop, and (8) Performance Coaching Workshop. At the request of DOH, ITRE will be continuing its work with the Steering Committee to provide these and other new training courses to DOH employees.

- **Pavement Management**
  Pavement Management Unit, NCDOH
  The patching and repaving that most people see on state roads are the last part of a managed and planned maintenance program that begins with one of ITRE's longest running areas of technical assistance... the pavement management survey and inventory.

**Since 1982 ITRE's Highway Program has assisted in training NCDOH engineers statewide to conduct pavement condition surveys.**

- **Maintenance Technical Assistance**
  Roadway Maintenance Unit, NCDOH
  ITRE's Highway Program has provided technical assistance to the Roadway Maintenance Unit since 1980. During 1991-92, ITRE continued its role as a trusted source for objective assessment, quality training and knowledgeable computer programming.
  At the request of the Roadway Maintenance Unit, ITRE assessed the workload and responsibilities of current unit staff and made recommendations regarding the potential for additional positions and new job responsibilities. ITRE also conducted a crew size study that presents recommendations for personnel and equipment needed by the field divisions to operate efficiently.
  ITRE was requested to extend the range of its training expertise through the use of video. In response, ITRE scripted and produced training videos on ditch maintenance and mowing which have been distributed to NCDOT roadway maintenance crews statewide for use as a field training tool.

- **Poster Contest Planning and Management**
  Highway Beautification Program, NCDOT
  ITRE's Highway Program researched, planned and implemented a poster contest targeted to students in grades K-8. The purpose of the contest was to raise the awareness of students about the need to maintain a clean environment in North Carolina. ITRE developed a direct mail promotion that was sent to all North Carolina public and private schools. Almost 400 posters were received in response to the contest promotion. A state winner was chosen by a panel of judges. A coloring book highlighting the posters of the finalists in each age category is currently being developed for distribution.
Local Governments

Helping local governments provide acceptable services at the least expense. This is what ITRE’s Local Governments Program has been accomplishing since 1983.

ITRE has helped cities and towns in rural and urban areas throughout North Carolina meet the challenge of providing quality transportation services to their citizens.

The provision of management tools and technical assistance to local governments has resulted in more cost-effective expenditure of public funds.

The Local Governments Program continues to work with municipal governments to provide technical assistance in other areas such as sign and marking inventories, and sidewalk maintenance.

Project Highlights:

- **Pavement Management Technical Assistance**
  
Pavement management can be defined as “effectively and efficiently directing the various activities that deal with providing and sustaining pavements in a condition acceptable to the traveling public at the least life cycle costs.”

  ITRE has helped numerous local governments work toward this goal through the development and implementation of PMS-ITRE, a custom written software package that analyzes the results of a pavement condition survey. The analysis provides information needed to plan and schedule pavement maintenance and resurfacing programs.

  PMS-ITRE provides a computerized street inventory on a block-by-block basis. ITRE field crews rate pavement conditions objectively and independently. Resulting measurements are uniform and consistent, unbiased by local perspectives and influences. An estimate of the maintenance need is provided along with priorities for resurfacing and routine maintenance. As the pavement management system is updated, changing pavement conditions can be closely monitored. Results are often used by public works departments to justify requests for increased funding.

  During 1991-92, ITRE provided pavement management technical assistance to over 35 North Carolina communities. Over 115 communities have been served by PMS-ITRE since it was developed in 1983.

- **Sidewalk Management System**
  
  City of Durham
  
  Many local governments have recognized the need to assess the conditions of their sidewalks and develop an organized approach to addressing sidewalk maintenance needs to minimize liability concerns. In addition, the passage of the Americans with Disabilities Act is making it necessary for municipalities to plan for the alterations of sidewalks and ramps for wheelchair access.

  Using the PMS-ITRE database and management system as a foundation, ITRE developed a detailed sidewalk survey and inventory that clearly pinpointed priority areas for repairs. In the next phase of the project, ITRE identified the location of wheelchair access ramps and quantified needed alterations as required by the Americans with Disabilities Act.

- **Traffic Sign and Marking System Pilot Study**
  
  City of Charlotte Department of Transportation (CDOT)

  CDOT is responsible for the placement and maintenance of signs and markings on more than 1,700 miles of streets. CDOT recognized the need to develop an inventory and evaluate the condition of existing signs and markings to better schedule and budget maintenance and replacement. In addition, such information is needed to reduce the liability concerns of the city.

After conducting a survey on a 20-mile random sample of streets, data were analyzed. Custom written software, Sign and Marking System (SMS), was developed to meet the needs of CDOT. SMS generates reports that list markings and signs that are in unacceptable condition or have very short remaining lifespans. This information is useful for budgeting, planning maintenance and scheduling work crews. The pilot study serves as a starting point for a citywide system to be implemented in the future.

Examining pavement stresses during pavement management survey.

- **Integrated Solid Waste Collection Service Improvements**
  
  Town of Mooresville, NC

  Since 1981, ITRE’s Local Governments Program has helped over 40 North Carolina small and medium sized municipalities and counties find ways to improve the operations of their solid waste management programs.

  In 1991, ITRE conducted an analysis of Mooresville refuse collection services. This included a determination of the costs of household, commercial and special refuse collection, an assessment of the needs and requirements for the collection of refuse and recyclable materials, a determination of the suitability and feasibility of alternative refuse collection services and an assessment of the impact of Senate Bill 111.
Technology Transfer ($T^2$) for Local Transportation Agencies

Technology transfer is a catch-all phrase that generally refers to any act of information exchange. But, for North Carolina’s towns and cities, technology transfer means a vital form of transportation training and technical assistance. North Carolina’s Technology Transfer Program for Local Transportation Agencies is located within ITRE’s Local Governments Program. This activity is sponsored by the Federal Highway Administration through a grant from the Local Technical Assistance Program (LTAP), formerly the Rural Technical Assistance Program (RTAP). North Carolina’s center is one of 50 centers established nationwide with the purpose of providing low-cost training and technical assistance to the nation’s cities and counties.

Since the program was established at ITRE in 1986, over 4,700 individuals have received training in subject areas ranging from improving communications skills to applying state-of-the-art transportation technology in the workplace.

Local agencies receive a quarterly newsletter, Transportation Tracks, which updates them on professional events of interest and useful applications of transportation technology. An information referral service and the distribution of technical materials are also important services available through the $T^2$ Program.

The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) expanded the breadth and scope of the services provided by the Local Technical Assistance Program. Funding was increased accordingly as the centers were charged with the additional responsibilities of assisting urbanized areas and American Indian tribal governments. A review committee was also established to solicit ideas from $T^2$ centers concerning new products that would help them better serve local transportation agencies.

These changes mean exciting enhancements to North Carolina’s $T^2$ Program. With the additional funding, North Carolina plans to establish circuit rider and Roads Scholar programs in 1993.

The $T^2$ Center will hire a circuit rider (or $T^2$ engineer) to perform a variety of duties for urban and rural areas. The engineer will be “on call” to provide on-site training sessions and demonstrations, and/or on-site investigations of field problems. It is hoped that the circuit rider will enable those local personnel who cannot travel to regular $T^2$ workshops to have easy access to the training and technical materials available from the Center.

Participants who enroll in the Roads Scholar Program will be required to attend 12 of 18 designated workshops, which will include both technical and management-related topics. Upon successful completion of these courses, participants will receive special recognition at an annual professional meeting and in the Center’s newsletter. They will also receive a certificate of training, letter of commendation, and a Roads Scholar cap. Of course, the most valuable benefit of becoming a Roads Scholar will be the opportunity to expand one’s knowledge of current road maintenance and management practices.

Without the $T^2$ Center serving as a link between federally-sponsored research products and their application at the local level, most towns and cities would remain isolated from the opportunities that new research presents for improving road construction, maintenance, and management activities. North Carolina’s $T^2$ Center is dedicated to helping its more than 500 municipalities take advantage of these opportunities.
Pupil Transportation

ITRE began research projects in the area of computer-assisted pupil transportation in the early 1980s. The objective of the software tools developed was to optimize the routing and scheduling of school buses in order to improve transportation efficiency. ITRE began installing the Transportation Information Management System (TIMS) in 1986—a project which continues to the present.

**TIMS is now installed in all 129 school districts in North Carolina. Savings have been achieved by reductions in fuel, mileage, and the number of buses operated.**

Funding for the school bus routing and scheduling projects has been provided to ITRE and the Department of Public Instruction since 1983 by the Energy Division, North Carolina Department of Economic and Community Development.

Through the successful installation of TIMS, ITRE has built a strong relationship with school districts in North Carolina and gained a unique insight into the issues that impact the operation of local school district transportation. This led to the development of new technical assistance efforts that provide valuable tools, training and information to school administrators throughout the state.

**Project Highlights:**

- **TIMS Installation**
  - NC Department of Public Instruction (DPI)
  
  As a result of the success of the initial TIMS installations in North Carolina, the North Carolina General Assembly enacted legislation that required all school districts to be using TIMS as of September 1, 1992. As a result, a major effort during 1991-92 focused on providing data preparation services, technical assistance and training to 39 school districts which had not yet installed the system.
  
  In 1989-90, less than half of the school districts in North Carolina had TIMS operational, and most of those had not used the optimization system to improve the efficiency of their transportation plan. Since that time, DPI had provided substantial funding incentives to improve their efficiency. Furthermore, the price of gas during the Gulf War required that fuel saving conservation measures be implemented.
  
  As a result of these two events and because TIMS was in place, significant savings were seen during 1991-92 as compared to 1989-90. During this period, the state fleet was reduced by nearly 500 buses; annual mileage was reduced by nearly 3 million miles; and fuel was reduced by nearly 1 million gallons.

For sites which had already installed TIMS, ITRE continued its program of technical assistance and training. The TIMS staff at ITRE works with DPI to identify needed software enhancements and hardware system improvements. Four of the largest school districts in the state (Wake, Mecklenburg, Guilford, and Forsyth counties) installed TIMS on an IBM RISC workstation computer. These counties were successfully converted to this new hardware platform, which has provided them with significant improvements over the PC-based system used by all other counties.

An extensive schedule of training classes was offered, both at ITRE/UNC-Charlotte (part of the Urban Institute) and at ITRE’s project office in Raleigh. In addition to this extensive training schedule, a statewide conference is held in March of each year, to bring together users from across the state, providing them with useful, current information related to the system.

- **Budget Rating Simulator**
  - NC Department of Public Instruction

DPI has recently changed the manner in which pupil transportation is funded to local school districts in the state. Based on a statewide peer comparison, each county is assigned a budget rating which is based on its total operating cost, number of students transported, and number of buses operated. The data are adjusted to account for various site characteristics including elevation, highway density, and pupil density. Ratings are generated by using sophisticated linear regression techniques.

The budget rating determines the percentage of the school district’s annual transportation expenses covered by the state. Therefore, there is a great incentive to become more efficient in order to improve the rating and, thereby, increase funding.
ITRE proposed the idea of developing a simulator that would operate on microcomputers at the local school district. The simulator allows local administrators to observe the change in their budget rating (and funding) based on proposed changes in their transportation plan. For instance, if 8 buses are parked, what is the effect on the rating? If cost is reduced by $92,000 per year, what is the effect on the budget rating?

While other states may have similar ways of determining funding allocated to school districts, the simulator is unique in the respect that transportation administrators can "test" the results of proposed changes prior to their implementation.

- **Transportation of Homeless Children**
  Charlotte-Mecklenburg Schools
  This project was conducted at the ITRE office on the campus of UNC-Charlotte. Charlotte-Mecklenburg Schools contracted with ITRE to examine the problem of transporting homeless children to the school where they were enrolled prior to their period of homelessness. Currently, when a student becomes homeless and resides at one of several shelters in the city, he/she attends school at A Child’s Place (a non-profit, community-based organization which has collaborated with Charlotte-Mecklenburg Schools to operate a specialized classroom for homeless children).

  Since these students come from different areas of Mecklenburg County, transporting them to their original school is quite complicated, without adding significant bus riding time, mileage and cost. Using the TIMS system, certain techniques were developed that could be used to help identify a more efficient means of transporting students to their "home" school under these circumstances.

- **Computer Model for School Planning**
  Mecklenburg County Planning Commission
  The rapid and varied population growth in Mecklenburg County over the last 10 years has caused schools to have inconsistent student enrollment. The situation has necessitated a long-term planning approach to the building of additional facilities, designing balanced attendance boundaries, and projecting demographic distribution of student enrollment patterns.

  Through a subcontract with the Interdisciplinary Transportation Studies program at UNC-Charlotte (UNCC), ITRE utilized add-on modules from the TIMS system and other sophisticated software tools to provide a model for school planning to be used by the Mecklenburg County Planning Commission.

ITRE and UNCC developed a computer model to assist the planning commission and the school board in planning facilities and designing student assignment plans based on projected enrollments. The system enables the design of school attendance boundaries which provide optimal transportation choices given user-defined parameters, such as the number of schools, their operating capacities and target racial percentages.
Geographic Information Services Program

As with many emerging technologies, the benefits of geographic information systems (GIS) are tied directly to an understanding of how and to what situations it may be applied most effectively.

Since 1984, ITRE has sponsored GIS educational workshops and provided technical assistance to state and local government agencies. ITRE reinforced its commitment to help state and local governments use GIS by establishing the Geographic Information Services Program in January 1992.

The GIS Program advises government agencies on selection, purchase and application of GIS. In addition, it supports GIS activities for a variety of applications, including vehicle routing and scheduling, facility siting, mapping, rural addressing, redistricting, address-matching, accident analysis, and environmental review.

During 1991-92, the program increased its collaboration with ITRE’s other program areas, working with the Pupil Transportation Program on attendance boundary creation and optimization and enrollment projection, and with the Local Governments Program on pavement management and sign inventory.

Project Highlights:

- **GIS Development Program**
  NC Department of Transportation

ITRE initiated and has managed the GIS program for NCDOT since 1988. ITRE started the project with a needs assessment to determine the best hardware/software system for NCDOT.

- **Rural Addressing**
  Montgomery County, NC

Providing emergency service to outlying areas can be a challenge because of the difficulty in locating rural addresses. To solve this problem, ITRE helped Montgomery County Emergency Medical Services implement rural addressing on PC ARC/INFO software. This program enables the county to maintain a system that can be updated easily and quickly, and produce maps. ITRE trained staff in the use of ARC/INFO to allow on-site maintenance of the cartographic map and the new address system, and map production.

- **GIS Implementation for a City Engineering Department**
  Kinston, NC

The City of Kinston wanted to use its GIS system to maintain inventories of its water and sewer systems, and of street-related infrastructure, such as pavement conditions and signs. ITRE converted the street layer from an existing AutoCAD file into an intelligent, PC ARC/INFO GIS layer containing street names, addresses and pavement conditions.

ITRE also provided assistance in developing fire response zones for the county using this database. The technology was transferred to Kinston personnel through on-site support and hands-on training.

ITRE has assisted with the creation of a cartographic database of more than 75,000 miles of state-owned roads.

This cartographic database will serve as the layer for display and analysis of all other DOT inventories and datalayers, including signs, bridges, performance monitoring sections, accident locations, pavement conditions, and improvement projects.

In addition, ITRE developed an applications interface which enables non-trained personnel to use GIS for certain application areas, such as traffic safety analysis, environmental impact assessment, and pavement management.

Other specialized modules will be developed by NCDOT and “plugged in” as applications develop. This innovative approach contributed to ITRE’s and NCDOT’s recognition by Environmental Systems Research Institute, Inc., a leading GIS software vendor, at its annual user conference “Application Spotlight.” DOTs around the country have expressed interest in using the ITRE/NCDOT applications interface for their own systems.

"Transferring" map electronically into GIS.
The impacts of the Clean Air Act, the Americans with Disabilities Act, and the Intermodal Surface Transportation Efficiency Act are contributing to a greater awareness of the need to improve and cultivate public transportation throughout the nation.

ITRE introduced the Public Transportation Program in June 1992 to assist national, state, and local decision makers in developing strategies and programs that respond to new legislation.

The new program area formalizes previous ITRE research, education, and technical assistance activities in the public transportation area.

During the last year, the Public Transportation Program has received national recognition for its research in the area of Advanced Public Transportation (APTS). A goal of APTS is to incorporate technology to make public transportation a more attractive travel option for the general public, and to improve the mobility of disabled and elderly individuals.

In 1992, the Public Transportation Program strengthened its ties with the North Carolina Department of Transportation, Public Transportation and Rail Division (PT&RD). ITRE is working in partnership with PT&RD on a range of technical assistance projects that focus on improving public and human services transportation in North Carolina.

Project Highlights:

- **Apprentice and Intern Programs**
  NCDOT/PT&RD

  The goal of the apprentice and intern programs is to encourage the development of a new generation of public transportation managers. Today, 13 years after the programs' creation, many of its graduates are playing pivotal roles in making public transit a viable transportation alternative in North Carolina communities, serving as transit planners, vanpool coordinators, operations managers and in other management capacities.

  Apprentices are college graduates who are employed for a one-year term in transit placement agencies statewide. Interns are graduate students who typically work part-time for one year at a transportation agency near their university or in a relevant research capacity in an academic setting. Both programs emphasize "hands on" learning that provides a broad view of system operations and transit issues.

- **Winston-Salem Mobility Manager**
  NCDOT/PT&RD; Winston-Salem Transit Authority (WSTA)

  ITRE has been given a leadership role in the performance of an operational test of a "Mobility Manager" for human services transportation in Winston-Salem and Forsyth County.

  Comparable in function to a travel agency, the Mobility Manager provides users and transportation agencies with a central point of contact. Disabled and elderly ridership will benefit from the Mobility Manager because it provides service options, facilitates making reservations, and reduces response and travel times.

- **Assessment of Computer Dispatch Technology in the Paratransit Industry**
  Federal Transit Administration

  Efficient dispatch of human service transportation is critical to maintaining quality service for special needs passengers and to meeting requirements of the Americans with Disabilities Act.

ITRE assists NCDOT/PT&RD with improving local public and human services transportation.

ITRE's report evaluates computer dispatch technology in the taxicab industry, examines how this technology is transferrable to paratransit operations, and provides an overview of scheduling and routing software currently on the market.

- **Peer Review Meeting**
  Triangle Transit Authority

  ITRE staff coordinated this two-day meeting for the Triangle Transit Authority, the regional transit authority for Raleigh, Durham, Chapel Hill and neighboring communities. Academic, government, and private sector experts on fixed-guideway and transportation modeling were invited to share their experiences and knowledge to assist the local transit decision makers in preparing for a local area fixed-guideway study.

- **Assessment of Computer Equipment and Training Needs**
  NCDOT/PT&RD

  The purpose of this project is to assist PT&RD in determining what computer equipment is being used in North Carolina's 58 transit systems, how these systems can improve operational efficiency through automation, and how to prioritize training and technical assistance needs.

Other Projects:

- 10th National Conference on Rural Public Transportation / NCDOT/PT&RD
- Seminar for Transit Planners / NCDOT/PT&RD
- Assessment of Paratransit Reservations and Scheduling Services / Capital Metro, Austin, Texas
- Technical Assistance in Computerized Paratransit Routing / NCDOT/PT&RD
- Public Transportation Entrepreneurs Roundtable / Federal Transit Administration
ITRE produces a tremendous volume of research results and products throughout the year. The Office of Information Services (OIS) is charged with packaging that information appropriately for ITRE's clients and the users of the Institute's research and educational activities. Whether the end product be a brochure, report, videotape, or workshop, OIS matches a creative team of communications professionals with state-of-the-art information technology to meet the demand for timely, high quality, useful information.

OIS was organized as an official program area at ITRE in January 1992. At that time OIS set its mission: to communicate the results of ITRE's research and education programs to its audiences and to foster ITRE's role of providing leadership for university transportation programs.

During its first year of operation, OIS directed the production of over 100 proposals, reports, manuals, brochures, and graphics presentations for ITRE's program areas and the transportation faculty at various UNC campuses.

In addition, the Office managed the technology transfer activities of the Local Technical Assistance Program and the Southeastern Transportation Center.

Currently, OIS provides the following services to ITRE's program areas and research centers:

- Documents production
- Graphics production
- Desktop design/layout
- Technical writing and editing
- Distribution of technical materials
- Event planning
- Training development
- Multi-media presentation packages (slide presentations, videotapes, computer graphics display shows)

In 1993, OIS plans to extend its services to transportation agencies outside of ITRE. These include state and municipal departments of transportation, and public and private transit providers.

OIS is excited about the opportunities that ITRE's projects hold and the challenges they present. As ITRE assists universities and other transportation agencies with developing research and educational programs, OIS ensures that the results of those programs are made available to those members of the transportation community who may benefit most from them.

Projects Highlights:

- **ITRE Corporate Identity Project**
  OIS created a new "look" for ITRE, which involved enhancing the Institute's logo and creating a new color scheme and stationery package. The purpose of this change was to characterize the Institute's progressive approach to meeting the research and educational needs of the local, regional and national transportation community.

This new look has been applied accordingly to ITRE's three research centers (STC, CTE, and TMRC).

- **Strategic Plan for the Marketing of Recyclable Materials in North Carolina**
  NC Department of Economic and Community Development, Energy Division

ITRE was selected by the Energy Division to develop a comprehensive strategic plan for the marketing of recyclable materials. Managing a project team that included three nationally-known environmental consulting firms, ITRE analyzed recyclable material markets and the recycling infrastructure of North Carolina, reviewed new processing and manufacturing technologies as they affect material marketing and assessed current and potential demand for recyclable materials by manufacturers in North Carolina and the Southeast.

From this research, ITRE developed a strategic plan that outlined state and local government, and private sector cooperation for the enhanced marketing of recyclable materials and improvements in the recyclable material collection, processing and transportation infrastructure.

ITRE fulfilled the educational component of this project through the creation of "The Guide to Marketing Recyclable Materials" that was distributed to North Carolina local governments, and the coordination of four workshops throughout the state.

This project was selected as a 1992 National Innovation Award Winner by the US Department of Energy.
Staff Listing

Administration
Gorman C. Gilbert, PhD, Director
Robert L. Martin, PE, Associate Director - Finance
Robert S. Foyle, PE, Associate Director - Programs
James B. Martin, PE, Associate Director - Programs
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Joanne P. Kemp, Secretary

STC Program
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