NCTIP
ANNUAL REPORT

Year Ending June 30, 2002

Section A

(Revised October 22, 2002)

National Center for Transportation and Industrial Productivity
New Jersey Institute of Technology
University Heights
Newark, New Jersey 07102

Phone: 973-596-6420
Fax: 973-596-6454

http://www.transportation.njit.edu/nctip
Section A of this report encompasses NCTIP activities under its three primary categories of Education, Research and Technology Transfer for the period July 1, 2001 through June 30, 2002. Areas mandated by the USDOT guidelines for annual reports are indicated in the Table of Contents.

Sections B and C are reported in a separate, accompanying document.
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Introduction
**DIRECTOR’S MESSAGE**

In November 2001 NJIT participated in the U.S. Department of Transportation’s Research and Special Programs Administration’s University Transportation Center Limited Competition where 10 universities were to be selected to receive continued UTC program funding for the next two years under the Transportation Equity Act for the 21st Century (TEA-21). There were six selection criteria outlined in TEA-21: strategic planning and performance, leadership capabilities, available resources, dissemination of results, multi-modality, and university financial commitment to transportation. Each successful university would use the funding to continue the operation of a UTC on its campus.

NCTIP learned on May 25 that its funding would not be renewed.

Following the research selection process, NCTIP in the 2001-2002 reporting period was granted 13 projects, thereby obligating all of its remaining federal monies (subsequently NCTIP was able to renegotiate with NJDOT to fully fund three of these projects). Concurrently, severe fiscal problems within the State of New Jersey resulted in significant reorganization and funding cutbacks within NJDOT and a 5 percent across-the-board funding cutback to all New Jersey colleges and universities. The loss of USDOT funding and the New Jersey statewide financial realities have heavily impacted NCTIP.

However, as seen in the *Research* segment of this report, NCTIP lists twenty active research projects. Seventeen active projects are funded by NJDOT, one by NJIT and two by other agencies, for a total of $2,258,964 in active research projects. Five of these projects are scheduled for completion at the end of 2003, and one has a completion date of 2006.

The Center’s budget was $2,299,342. Roughly 60% of funding for NCTIP research projects in the 2001-2002 fiscal year came from NJDOT – vis-à-vis roughly 25% from USDOT and 15 percent from other sources (see Funding Sources pie chart below).

As will be seen throughout this report, NCTIP has very successfully carried out the commitments of its Strategic Plan, one of which was to strengthen the Center’s reputation as a resource for effective and dynamic response to state and regional transportation issues including the areas of educational, research and technology transfer. In addition to the *Garden State Parkway Toll Plaza Removal* project (NCTIP 995953) and *Mobility and the Costs of Congestion in New Jersey – 2001 Update* (NCTIP/NJDOT 995951), NCTIP recently completed a *Feasibility Analysis Study and Conceptual Development Plan for Morris County at Picatinny Arsenal* (NCTIP 992539) and is currently involved in the *Technical Support to NJDOT on the American Truck Associations, Inc. (ATA) Lawsuit* (NCTIP/NJDOT 995969). In December 2001, at the request of then Governor-Elect James McGreevey, NCTIP provided a Governor’s White Paper in support of McGreevey’s call for the development of a comprehensive transportation master plan with policy and programs designed to address New Jersey’s economic development and infrastructure needs.

**THEME**

The theme of the National Center for Transportation and Industrial Productivity (NCTIP) is "Increasing Productivity through Transportation Improvements." This theme was originally set forth
in the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 and affirmed by New Jersey Institute of Technology (NJIT) in August 1998, after NCTIP was reauthorized in the Transportation Equity Act for the 21st Century (TEA-21).

The theme and mission of the Center support the United States Department of Transportation's (USDOT) strategic goals of Mobility and Economic Growth as well as the following outcomes of the National Transportation Science and Technology (NTST) strategy:

- Enhancing goods and freight movement at domestic and international gateways
- Increasing global competitiveness
- Optimizing intermodal passenger and freight transportation systems,
- Modeling tools for transportation planning, design and operations.

**MISSION STATEMENT**

* . . . . * to contribute to the increase in the transportation and industrial productivity of the nation’s transportation systems, facilities, and public and private organizations by conducting high quality multi-disciplinary education, rigorous research, and technology transfer activities in the areas of passenger and freight movement efficiency, and regulatory and institutional efficiency.*

**FINANCIAL REPORT**

**Expenditures**

- Administration 5.08%
- Education 14.69%
- Research 72.14*%
- Technology Transfer 8.09%

*Stipends and tuition for students working on sponsored research projects are included in the research share.
Funding Sources

- NJDOT 59.81%
- USDOT 24.63%
- NJIT 3.81%
- Other 11.75%

Management Structure

- PROVOST

  - BUSINESS MANAGER
    - Anthony Jones
  - DIRECTOR
    - Lazar N. Spasovic
  - ACADEMIC PROGRAMS
    - Athanassios K. Bladikas

  - TECHNOLOGY TRANSFER SPECIALIST
    - Sally O’Malley
  - PRINCIPAL INVESTIGATORS
  - SENIOR RESEARCH PROJECT DEVELOPER/ LAN MANAGER
    - Chi Tang

National Center for Transportation and Industrial Productivity

...productivity improvements through transportation
NCTIP Organizational Linkages

PROVOST
W. Van Buskirk

Newark College of Engineering
A. Perna

Interdisciplinary Program in Transportation
A. Bladikas

Civil and Environmental Engineering
J. Schuring

New Jersey School of Architecture
U. Gauchat

Infrastructure Planning
D. Sollohub

Education Committee

NCTIP
L. Spasovic

Research and Technology Transfer Committee

School of Management
M. Somers

M.S. & M.B.A. in Management of Technology

Outreach

PROVOST
W. Van Buskirk

Newark College of Engineering
A. Perna

Interdisciplinary Program in Transportation
A. Bladikas

Civil and Environmental Engineering
J. Schuring

New Jersey School of Architecture
U. Gauchat

Infrastructure Planning
D. Sollohub

Education Committee

NCTIP
L. Spasovic

Research and Technology Transfer Committee

School of Management
M. Somers

M.S. & M.B.A. in Management of Technology

Outreach
TRANSPORTATION AT NJIT

NCTIP’s theme, *Increasing Productivity Through Economic Improvements* includes the mandate to increase freight and passenger movement efficiency and facility, institutional and regulatory efficiency. Two major additions to transportation at NJIT, which were facilitated because of NCTIP’s existence, now work closely with the Center in a seamless interface.

- **International Intermodal Transportation Center (IITC)**
  
  The long-term establishment of NCTIP at NJIT leveraged the 1999 designation by the New Jersey Commissioner of Transportation of NJIT as the *International Intermodal Transportation Center*. IITC, a university-based resource program, works closely with public and private sector transportation stakeholders to facilitate economic development and quality of life improvement efforts linked to the intermodal transportation corridor in New Jersey. One of IITC’s primary goals is to identify common and complementary needs within the region, ensuring that a cooperative agenda can be created to further economic growth from the powerful global trade assets shared by the region. The Center is funded by a $2 million grant from the U.S. Department of Transportation Federal Highway Administration (FHWA) under the High Priority Projects Program of the Transportation Equity Act for the 21st Century (TEA-21). Many common areas for rich interchange exist between the functions of NCTIP and IITC, and the two entities have cooperated on several significant research projects. Most significant among these efforts was the development of the "*Ten Year Plan to Remove the Toll Barriers on the Garden State Parkway*."
• **Brownfields Economic Development Initiative** [http://njtpa.njit.edu/planning/brownfields/index.htm](http://njtpa.njit.edu/planning/brownfields/index.htm)

The presence of NCTIP was also instrumental in receiving funding for an innovative project to explore opportunities for reclaiming brownfields in and around the Port Newark/Port Elizabeth area. Brownfields are defined as “abandoned, idled, or under-utilized industrial and commercial facilities where expansion or redevelopment is complicated by real or perceived environmental contamination”. For northern New Jersey, the successful reclamation of brownfields by freight businesses would harness major economic development opportunities brought about by the huge projected growth of freight traffic in the region while helping to reverse the loss of jobs and economic activity in the region's blighted urban areas while. The North Jersey Transportation Planning Authority, Inc., the federally sanctioned Metropolitan Planning Organization for the northern New Jersey region and the New Jersey Institute of Technology were chosen to receive $1.4M in federal funds to prepare a study to facilitate efforts by government and the private sector to pursue freight-related Brownfield redevelopment. The project is funded under the federal Transportation and Community and System Preservation Pilot Program.

• **The New Jersey Transportation Information and Decision Engineering (TIDE) Center** [http://www.njtide.org/](http://www.njtide.org/)

TIDE is a five-year effort funded by the New Jersey Commission on Science and Technology. The purpose of the Center is to "develop technologies that will help individuals and commercial enterprises make better transportation-related decisions." It is envisioned that TIDE will spur the commercialization of research products and the establishment of a viable traveler information industry in New Jersey. NJIT received 60 percent of the initial $700,000 per year grant with the remainder divided among Princeton, Rutgers University and City College of New York. The Center requires a 200 percent match.

• **TELUS** [http://www.telus-national.org/](http://www.telus-national.org/)

TELUS (the Transportation Economic and Land Use System) project is a six-year, $1 million per year project initially funded by NCTIP and subsequently earmarked directly under TEA-21. Its objective is to develop and deploy a computer-based information system designed to help MPOs nationwide meet their legislative mandates under TEA-21. An MIS system tracks projects, showing the interrelationship with other projects, estimating economic and land use effects, and providing a user-friendly display of the information. The program is being developed in close consultation with NJTPA. TELUS requires a 20% non-federal match.

In addition, NJIT is host agency to the North Jersey Transportation Planning Authority (NJTPA), the metropolitan planning organization that encompasses the 13 northern counties in New Jersey with an annual operating budget of $7M. NJTPA is involved with IITC and co-directs Brownfields.

**NCTIP ADVISORY BOARD**

John Betak, President
Collaborative Solutions Inc. (Chair)

Philip Beachem, President
New Jersey Alliance for Action

Athanassios K. Bladikas
Chair, Department of Industrial and Manufacturing Engineering
Director, Interdisciplinary Program in Transportation
Maria P. Boilé, Assistant Professor of Civil and Environmental Engineering  
Rutgers University

Wayne Bradley, Director of Planning  
North Jersey Transportation Planning Authority

Michael Brimmer, Regional Vice President  
CSX Corporation

James C. Cunningham, President  
PTL Truck Lines

Edward K. Morlok, UPS Foundation Professor of Transportation and Systems Engineering  
University of Pennsylvania

Roger Nortillo, Executive Vice President  
Maher Terminals Inc.

Naomi Rotter, Professor of Management  
School of Management, NJIT

John Schuring, Chair  
Department of Civil and Environmental Engineering, NJIT
Success Stories
TRANSPORTATION GRADUATES ENHANCE THE PROFESSION
Contact: Sally O’Malley, Technology Transfer Specialist, 973-596-6463 omalley@njit.edu

Among transportation graduates NCTIP has followed, an estimated 98 percent are working in transportation or related fields. Below are selected synopses of transportation graduates who have been supported by NCTIP during their studies and who have achieved significant success in the transportation profession. About 215 masters degrees and 13 doctorates in Transportation have been granted since 1994. Numerous other transportation students over the years have opted for degrees in other disciplines e.g., Civil Engineering, Industrial and Manufacturing Engineering, Infrastructure Planning.

- Dr. Shahid Iqbal received the first Ph.D. degree in Transportation granted by NJIT in 1994. An adjunct professor since 1992, Dr. Iqbal teaches courses in Geometric Design of Transportation Facilities and Traffic Safety.” Dr. Iqbal owns a Civil/Traffic Engineering Consulting Firm, Paragon Associates, in Sayreville, New Jersey. He is a registered Professional Engineer in New York.

- Dr. Maria P. Boilé received NJIT’s second Ph.D. in Transportation in 1995. She was appointed tenure track assistant professor in the department of civil and environmental engineering at Rutgers University in fall 2001. Dr. Boilé, who serves on NCTIP’s advisory board, previously held appointments as assistant professor with the department of civil and environmental engineering at Lafayette College from 1995-2000 and was visiting assistant professor with NJIT’s department of industrial and manufacturing engineering and NCTIP from January through July 2000. Her research work includes passenger and freight transportation planning, intermodal transportation systems analysis, geographic information system technologies in transportation, intelligent transportation systems and mass transit, and has been sponsored by NJDOT, PennDOT, USDOT, National Center for Transportation and Industrial Productivity, FHWA, AT&T Foundation and the Knight Foundation at Lafayette College.

- Dr. Mei Chen received her Ph.D. in Transportation from NJIT in 1999. She was appointed to a tenure track position as assistant professor of civil engineering at the University of Kentucky as of February 2002. While still a student, Dr. Chen developed a sophisticated methodology of network toll design that provides valuable decision support to policymakers for use on a NCTIP research project Developing an Integrated Congestion Pricing and Traveler Information System, which was a significant breakthrough in the design of congestion pricing policy and was recognized by her peers in the transportation research community as a development with a great potential for nationwide application. Upon graduation, she was employed as a principal planner for NJIT’s Transportation Information and Decision Engineering (TIDE) Center. In September 2000 she became visiting assistant professor with NJIT’s department of civil and environmental engineering and NCTIP.

- Dr. Wu Sun received his Ph.D. in Transportation from NJIT in 1999 and has been employed since that time as a senior information analyst with NJIT’s Transportation Information and Decision Engineering (TIDE) Center. He completed an additional masters degree in computer science in 2000. Dr. Sun's current research interests include transportation network design, transit study, and parking reservation system design. He is especially interested in making transportation applications accessible online; has completed a prototype web-based transit timetable system; and is working on a web-based parking reservation project. Dr. Sun's thesis is titled Optimization of Urban Traffic Control Strategies by a Network Design Model.

- Dr. Nazhat Aboobaker received her Ph.D. in civil and environmental engineering from NJIT in spring 2001 and is currently employed by the New Jersey Department of Transportation as a project manager within their Division of Research and Technology which oversees NCTIP/NJDOT research projects.
While at NJIT, Dr. Aboobaker was granted a Presidential Fellowship for the entirety of her program, one of a limited number of fellowships awarded to outstanding doctoral students by the university. She had previously received a master's degree in environmental engineering from NJIT, accomplishing both degrees while maintaining a perfect 4.0 GPA in each as a full-time student.

- **Agnes Wang** received her Ph.D. in Transportation in fall 2001 and has since accepted a position as a transportation planner with Valley Transportation Corporation (VTA) in Santa Clara, California.

- **Cecilia Kelnhofer-Feeley** received an M.S. in Transportation in 1998 and is currently a Ph.D. student. NCTIP’s 1997 Outstanding Student of the Year, recipient of the NJIT Presidential Fellowship (one of a limited number of fellowships awarded to outstanding doctoral students by the university) for the past two years, and winner of a $1,000 Women’s Transportation Seminar award, Ms. Kelnhofer-Feeley was completing her M.S. in Humanities and Social Services when she became interested in the transportation field. Before returning to NJIT to pursue her doctorate, she was employed for two years by the North Jersey Transportation Planning Authority as a senior transportation planner. At the request of the university, she served on the Task Force on Graduate Studies and Research for NJIT’s Middle States accreditation process.

- **Lida Mazaheri** received a master’s degree in transportation in 1998 and is continuing doctoral studies. NCTIP’s 1999 Outstanding Student of the Year, Ms. Mazaheri spent two years as a traffic engineer with the Port Authority of New York and New Jersey, in charge of New York’s LaGuardia Airport. Her responsibility included ensuring the safe and orderly flow of both vehicular and non-vehicular traffic throughout the airport by implementing the latest traffic engineering techniques. She returned in fall 2000 to pursue her Ph.D.

- **Jakub Rowinski** received a masters degree in transportation in 1999, and is continuing studies toward his Ph.D. NCTIP’s 2001 Outstanding Student of the Year, Mr. Rowinski has been employed since May 2001 as a transportation engineer with NJIT’s International Intermodal Transportation Center (IITC), where he helped produce the significant NCTIP/IITC study, *Ten Year Plan to Remove Barrier Tolls on the Garden State Parkway* (see below), and has performed various transportation analyses for the area of Port Newark/Elizabeth. He was also involved in the NCTIP study *Mobility and the Costs of Congestion in New Jersey* (see below). Mr. Rowinski received his undergraduate degree from Lafayette College in 1995, where his advisor was Dr. Maria Boilé (above).
<table>
<thead>
<tr>
<th>Course</th>
<th>Research Project</th>
<th>Course Description</th>
<th>Class Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>HRM 301 Organizational Behavior</td>
<td>Gender and Professional Worklife at State DOTs: A Pilot Study The Uses of State DOT Research: Customer Use of Completed Projects from NJDOT Bureau of Research*</td>
<td>Foundation course in individual and group behavior in organizations. Processes such as perception, motivation and leadership are examined with a focus on issues central to technology-based organizations (innovation, creativity, managing technical professionals).</td>
<td>30</td>
</tr>
<tr>
<td>HRM 301 Organizational Behavior (E-Learning) Rotter</td>
<td>The Mature Driver: Safety and Mobility Issues Moving Telecommunications Forward*</td>
<td>Similar to above</td>
<td>41</td>
</tr>
<tr>
<td>HRM 303 Human Resource Management (E-Learning) Rotter</td>
<td>The Mature Driver: Safety and Mobility Issues Moving Telecommunications Forward*</td>
<td>Covers basic human resources concepts including recruitment, selection, EEO, training, labor relations, and human resources information systems. Human resources management practices in technology-based firms are studied in detail.</td>
<td>29</td>
</tr>
<tr>
<td>HRM 310 Managing Diversity Schachter</td>
<td>Gender and Professional Worklife at State DOTs: A Pilot Study</td>
<td>This course analyzes issues that arise in managing a diverse work force. After examining the demographic environment of contemporary organizations, significant attention is paid to developing strategies to recruit, train, motivate, and retain employees with diverse personal characteristics. While the emphasis is on developing broad-based interpersonal skills, the impact of federal and state laws and regulations is also studied. In addition, students examine the implications of technological developments for managing a diverse population</td>
<td>65</td>
</tr>
<tr>
<td>HRM 606 Human Resource Management (E-Learning) Rotter</td>
<td>The Mature Driver: Safety and Mobility Issues Moving Telecommunications Forward*</td>
<td>This e-learning course covers management of human resources in business, industry, and government; developing personnel programs including wage and job classification, training, employee and labor relations, and accident prevention. Particular attention is directed to cases and roles involving both line and staff managers.</td>
<td>13</td>
</tr>
<tr>
<td>IE 355 Human Design Factors in Engineering Jeng</td>
<td>Evaluation of Design Ideas for Prevention of Vehicles Entrapment on Railroad Tracks Survey of Driver Perceptions of Railroad and Light Rail Warning Devices/Grade Crossings Pedestrian Safety and Mobility Aids for Crossings and Access to Bus Stop</td>
<td>This course examines human-machine systems. Dr. Jeng is PI for three projects addressing research in human factors in transportation, particularly drivers' and pedestrians' perception toward various displays of traffic control devices: In this course he introduces those projects to students; several groups of students had their semester projects pertaining to evaluation of traffic signs, maps, etc. for on- and off-campus sites</td>
<td>81</td>
</tr>
<tr>
<td>IE 669 Human Design Factors in Engineering Jeng</td>
<td>Evaluation of Design Ideas for Prevention of Vehicles Entrapment on Railroad Tracks Survey of Driver Perceptions of Railroad and Light Rail Warning Devices/Grade Crossings</td>
<td>Similar to IE 355, this course requires all students to come up with design ideas for preventing vehicular entrapment at railroad crossings</td>
<td>15</td>
</tr>
<tr>
<td>Crossings Pedestrian Safety and Mobility Aids for Crossings and Access to Bus Stop</td>
<td>MIP 601 Interdisciplinary Infrastructure Studio Solohub</td>
<td>This project investigates the I-95 corridor as a linear city and its impact on Newark’s Ironbound section. The studio’s work, produced by teams organized according to individual skills and interests, is undertaken as part of an institute wide effort funded through a federal grant that involves students and faculty from the departments of architecture, transportation and management as well as planners from the NJDOT and the North Jersey Transportation Planning Authority.</td>
<td>15</td>
</tr>
</tbody>
</table>
Gerald Charleston, a civil engineer with the New York State Department of Transportation, is currently completing a master’s degree in Transportation at NJIT under the terms of the university’s Advanced Institute for Transportation Education Scholarship program. Mr. Charleston will finish his coursework in December 2002 and a master’s project under the direction of Dr. Janice Daniel, assistant professor of civil and environmental engineering and transportation, in spring 2003. His scheduled graduation date is June 2003.

Gerald Charleston received an undergraduate degree in construction engineering (1996) and a master’s degree in civil and environmental engineering (1998) from NJIT. He then operated as a consultant for Agia Mason Inc. in the implementation of a Critical Path Method (CPM) schedule in 1998. Hired as a junior engineer in the Design Division of NYSDOT – Region 8 in fall 1998, he designed elaborate traffic control plans and estimates for a $15 million project on the Taconic State Parkway. He was promoted to civil engineer in July 2000 and joined the Geographic Information System (GIS) group within the Design Division. He designed a GIS application originally to enable designers to retrieve information pertinent to design reports. The application has become a portal of choice for GIS within the entire region.

In February 2002, Charleston was nominated GIS Coordinator for NYSDOT – Region 8, responsible for all matters related to GIS including training, promotion, standardization and development within the region. He is interested in the incorporation of GIS as an integral tool for analysis in planning, design, real estate, construction and maintenance within the department of transportation.

“With this scholarship, I am acquiring a more wholesome view of the field of transportation,” Charleston said. “Most professionals within the DOT are civil engineers who are trained to design and build highways and bridges but sometimes lack the vision of an integrated intermodal transportation system. This degree in transportation will allow me to make that type of contribution to the DOT as I move forward in my career.”

The AITE scholarship is available to outstanding students pursuing a graduate degree in transportation at NJIT - full-time students entering the field of transportation or part-time students who are employees of state and regional public transportation agencies. The scholarship is based on a student’s academic performance and standing, leadership capacity, communication skills, academic and professional interests, and support from employer for applicants currently working in transportation.
NCTIP CONTINUES SUPPORT FOR THREE PRE-COLLEGE PROGRAMS
Contact: Sally O’Malley, Technology Transfer Specialist, 973-596-6463 omalley@njit.edu

A September 2001 USDOT communication underlined the Garrett A. Morgan Technologies and Transportation Futures Program as a priority for the Department of Transportation. “Consistent with past practices, UTC Performance Indicator data will be used to assist in the effort to reach students at all levels.”

For the past several years NCTIP has actively supported almost 200 students in three pre-college programs with transportation focuses:

- The Summer Transportation Institute involves approximately 30 greater Newark area high school students in the world of transportation five full days a week for three weeks each year. In addition to seminars and design projects, the students work on problem solving in transportation – e.g., planning ramp metering and a trolley schedule for an 8-station system.

- The Abington Avenue School Gifted and Talented Program brings 50 5th through 8th graders from the Newark school to the NJIT campus one day a week during the spring semester. An elective undergraduate class was designed within the New Jersey School of Architecture for undergraduates to mentor the Abington students, challenging both groups to an understanding of the virtual transportation laboratory in which they live.

- Paterson School District Garrett A. Morgan Academy enters its third year in fall 2002 as a transportation and technology academy within the Paterson school district. NCTIP has been providing curriculum design and advisor services in the person of Presidential Award (for Excellence in Science, Mathematics and Engineering Mentoring) winning Professor Hal Deutschman since the academy’s first year in operation. An estimated 25-30 students are in each class. Dr. Deutschman also heads the Summer Transportation Institute (above).
In addition to *Mobility and the Costs of Congestion in New Jersey – 2001 Update*, *Garden State Plaza Toll Plaza Removal* and the *2020 Infrastructure Study*, NCTIP has responded to the State of New Jersey with the following:

- **American Trucking Associations, Inc. (ATA) Lawsuit**
  The American Trucking Associations, Inc. (ATA) is a national trade association, representing approximately 3,000 motor carrier members. ATA initiated a lawsuit against the State of New Jersey contending that the New Jersey Truck Route Regulation increases fuel consumption, particulate emissions, risk of accidents, cost of hauling freight and cost of goods. Enacted in 1999, this regulation subjects 102-inch-wide trucks and double trailer truck combinations to certain highway access limitations depending on the nature of their business operations in the state. Specifically, vehicles involved in "interstate through travel," defined as "trips with neither an origin nor destination in New Jersey," may only use highways in the State that are part of the "National Network." The National Network in New Jersey is made up of approximately 545 miles of highway and includes the New Jersey Turnpike and the interstate highway system. Vehicles involved in "intrastate access travel," defined as "trips with an origin and/or a destination in New Jersey" are permitted access to the Access Network. The Access Network is approximately 3,600 miles and includes the National Network as well as selected state and county roads. NCTIP/IITC was retained to support NJDOT in the lawsuit. NJIT has preparing technical analyses in the areas of traffic, safety, environmental, and economics to demonstrate that the ban was consistent with state policy to improve traffic safety and decrease air pollution. Final expert witness testimony was submitted in July and the process of rebutting the ATA’s expert witnesses has begun. Deposition(s) will start in August 2002.

- **Governor’s White Paper**
  In December 2001, NCTIP/IITC responded to a request by the Governor’s transition team to provide a white paper to Governor-Elect James McGreevey. Stating in its introduction that “The events of September 11 brought into sharp focus our utter dependence on an effective transportation system,” the paper focused on the significance of the international intermodal transportation corridor to New Jersey in helping use New Jersey resources – access ports, airports, waterways, centers of commerce – the links to the global economy – to their fullest. Calling for a ‘seamless, efficient, interconnected, intermodal 21st Century transit system’ an advanced telecommunications system, and fiscal stability, the paper offered immediate actions, highlighted high priority projects, and recommended the Governor focus on three broad areas in addressing the transportation needs of the State: fiscal conditions, planning and coordination, and management and organization structure.

- **Picatinny Arsenal Feasibility Study**
  In operation for over 100 years, the Picatinny Arsenal covers almost 6500 acres in Morris County, New Jersey and has been a major source of ammunition in wartime. Currently, its primary mission is research, development, and pilot-plant production of explosives and propellants for the U.S. Army. Picatinny is surrounded by suburban as well as summer-vacation areas. On base Lakes Denmark and Picatinny are used for recreational activities. In light of potential future plans to reduce the number of military bases, base officials are seeking to determine the feasibility of developing certain vacant or underutilized areas within Picatinny for quasi public and private sector office, industrial and research use. NCTIP/IITC was engaged by the Morris County Technology Team to conduct a feasibility analysis and conceptual development plan. Its role included an evaluation of the existing transportation infrastructure as well as an assessment of transportation impacts associated with developing large tracts of available vacant land within the arsenal complex.
The recently completed study identified known transportation problems and issues; assessed cumulative effects of proposed development areas outside the arsenal; performed a site survey of Picatinny’s internal road system; identified potential volumes of traffic to be generated; and recommend changes and/or upgrades to internal and external road systems or traffic patterns, thereby enabling both the county and the arsenal to evaluate impacts of redevelopment on transportation in the area.
- Economic and Quality of Life Impacts of Route 21 Freeway Construction

Context Sensitive Design (CSD) is a collaborative, interdisciplinary approach to identifying and solving transportation problems in which consensus building extends from defining the project need and purpose, concept evolution, design and construction through maintenance and operation. CSD maximizes the integration of the roadway into the surrounding environment/community, while providing for the road user’s needs in a manner that is fiscally feasible. CSD is an attitude and a process, not an outcome, according to NJDOT. Opened to traffic in December 2000, the ‘missing link’ of the Route 21 Freeway in Clifton and Passaic, NJ was designed utilizing the ‘equivalent’ to the CSD approach at that time and will be the highway project used for the evaluation of CSD. A great deal of planning and design work was done to enhance the quality and appearance of this roadway and to maximize positive impacts on and for the surrounding communities. This research project will evaluate over a five-year period how effective the CSD approach was in the design of the Route 21 Freeway. The evaluation will focus on economic and quality of life issues. Economic issues reviewed will include impacts on neighborhoods, residential real estate values, the success of commercial enterprises in the area, and traffic and safety in the local area. Quality of life issues reviewed will include aesthetics and viewscape, level of service of traffic flow and other factors of concern to the local population. Public perception initially and over a five-year period will be measured by surveys to be taken each year of the project. This is an important element in the study because success ultimately must be 'seen' by the impacted public literally and figuratively. In addition, traffic counts will be taken to determine changes from pre-construction to post-construction conditions and variations over the five years of the study. Other published data will be utilized to measure changes in economic and quality of life improvements.

- Good Neighbor Privacy Fences

Privacy fencing has the potential for improving the quality of life for neighbors of our highways. In keeping with NJDOT’s "Good Neighbor" program, for situations where noise barriers are not required or feasible there is a need for low height fencing that can provide a visual screen. Privacy fencing, typically limited to 7-8 feet in height, is a lightweight, non-engineered installation that is not designed to provide noise mitigation. Fencing, such as wood, chain link, concrete or metal has often not provided adequate visual screening, and has been below standard aesthetically, difficult to construct; with a short useful life, or has required an unacceptable level of maintenance. Highway privacy fencing needs to provide an acceptable level of aesthetics for property owners and highway users, as well as resistance to the harsh road salt environment it will be exposed to in New Jersey. This project has reviewed available literature and the current practice of privacy fencing both in the United States and abroad. It will evaluate whether the project will benefit from partnering with industry. A fully detailed set of standard design details will be developed after a thorough investigation of all aspects of the problem, and construction guidelines will be developed that will serve as a basis for policy. It is anticipated that several types of fences will be designed for different field conditions, reflecting varying design life and low maintenance schedules to fit different situations. Eventually, it is envisioned that a recommendation may be made to NJDOT to supplement the project by manufacture and erection of a prototype fence to best evaluate aesthetics and ease of construction.
- Use of Neural Network/Dynamic Learning Algorithms to Predict Bus Travel Times Under Congestion Conditions
The characteristics of real-world transit operations (e.g., travel times on links, dwell times at stops and delays at intersections) are stochastic and unpredictable. Combined variations in demand and traffic conditions further deteriorate headway/schedule adherence, thus lengthening the waiting time and degrading the quality of service. The Advanced Public Transportation Systems (APTS) program, one of the major components in ITS, was initiated by the FTA to encourage applications of emerging technologies in computers, communication, and navigation for promoting the efficiency, effectiveness and safety of public transportation systems. APTS technologies, such as Global Position Systems (GPS), Automatic Vehicle Location Systems (AVLS) and Automatic Passenger Counters Systems (APCS), have been implemented in various public transit systems to obtain precise real-time information, including vehicle locations, speeds, and occupancies. Such information can enhance transit passenger information systems as well as transit planning and management systems, and improve the overall service quality. In response to growing traffic congestion and consequent passenger demands for more reliable service, NCTIP is developing a Neural/Dynamic (ND) model to predict bus travel time under congested conditions. Based on a similar model previously developed by NCTIP, the model has been calibrated and validated using data generated from an enhanced CORSIM model. In this research, an ND model is being developed, tested, and evaluated using real-world data collected from APCS and AVLS/GPS.

- Assess Impacts and Potential Benefits of Traffic Signal Priority for Buses
As it is no longer feasible to build our way out of traffic congestion problems, encouraging the use of public transportation is one way to reduce this growing worldwide dilemma. Designing and operating bus transportation to provide an attractive alternative to auto travel is critical. Signal priority for has been proposed as one way of keeping transit vehicles on schedule, leading to more efficient public transit systems, and hopefully to broader use of public transportation. Although signal priority has proven to be an effective tool for reducing delays to buses, this technique is not always beneficial to the overall traffic network. Providing priority for transit vehicles along a corridor with a large number of transit vehicles can cause a coordinated network to be out of step resulting in an overall increase in delay. Bus signal priority also has the disadvantage of penalizing the cross-street traffic when high transit volumes exist at the corridor, which can create significant delays at locations where the cross street carries significant traffic volumes. Some traffic engineers, local elected officials, and others have been reluctant to provide traffic signal priority for transit out of a concern that it would cause non-transit vehicles to encounter significantly increased delay. NCTIP has undertaken a study to assess the impacts of and the implementation issues associated with the use of bus signal priority in New Jersey. The study will develop operational test plans for implementing signal priority at promising locations; and assess the benefit and costs of signal priority.

- Effectiveness of Bus Nubs for Bus Stops
A nub is a treatment made to the sidewalk extending the sidewalk and curb at an intersection into the street to a distance equal to the depth of a typical parallel parking space. A bus nub is a sidewalk extension into the street with a bus stop located on the nub. Nubs have been used as a solution for pedestrian safety, traffic calming purposes and as the location for bus stops. The nubs reduce the walking time and crossing distance of pedestrians by extending the curb to the edge of the through lane. This reduction in walking time and travel distance equates to a reduction in the exposure of pedestrians to roadway vehicles, resulting in an increase in pedestrian safety. As a traffic calming measure, nubs reduce the speeds of turning vehicles by cre-
ating a 90-degree corner. When a bus stops at a bus nub, the bus remains in the travel lane, rather than weaving into and out of the curb lane as is typical of curbside bus stops. Removing this weaving has the potential of reducing conflicts between buses and other vehicles on the roadway as the bus does not have to merge back into the traffic stream after stopping at the bus stop. The safety and effectiveness of bus nubs is questioned in urban locations where heavy vehicular volumes and possible long dwell-times at the bus stop may result in increased delays and possible head-on collisions as vehicles may attempt to go around the stopped bus. Benefits attributed to bus nubs, including reduced delays to buses and traffic calming effects, must be weighed against the delays to other vehicular traffic on the roadway and possible safety impacts. NCTIP has undertaken to perform an evaluation on the effectiveness for bus nubs taking into account the particular conditions and driver population of New Jersey.

- Pedestrian Safety and Mobility Aids for Crossings and Access to Bus Stops

In New Jersey, increasing traffic volume, higher population density and a larger number of pedestrians using the highway system have prompted state, county and local governments to use a variety of measures to enhance pedestrian safety and mobility. Design, location and installation of traffic control devices on public roadways are largely dictated by the USDOT Manual on Uniform Traffic Control Devices (MUTCD) that outlines specific requirements for the type and size of roadside traffic signs, pavement markings, and traffic signal design. Where traffic signals do not exist, or where physical obstructions, such as a median barrier, hinder pedestrian movements, it becomes difficult to safely accommodate pedestrians. Enforcement of state law prohibiting pedestrians from crossing between intersections is not always practical. Difficulty in maneuvering crossings can discourage use of transit. Under certain conditions, pedestrians can be redirected to signalized intersections, where crossing movements can be accommodated more safely. However, under conditions where the amount of time to cross is limited, such as the need to access transit, pedestrians will most likely find the shortest path. Measuring the effectiveness of strategies to enhance safety and mobility for pedestrian street crossing movements and access to bus stops is unfortunately somewhat more difficult to determine using typical traffic engineering evaluation criteria. Pedestrian accidents, while reported, may be so infrequent that they fail to indicate the nature of a specific problem. Infrequent pedestrian movements can make specific crossing deficiencies difficult to identify and quantify. While sometimes difficult to quantify and evaluate, the ability to safely accommodate pedestrian movements on streets and highways is an important issue for transportation safety professionals. Increased use and acceptance of traffic calming strategies, innovative pedestrian signing, elaborate traffic signal sequencing, and substantial investment in streetscape projects all are rooted in the ability to enhance pedestrian safety and mobility. Pedestrian safety and mobility is also becoming more recognized as an integral part in making mass transit and other alternative transportation modes successful. This research uses a human-centered approach for evaluating an array of creative solutions to address pedestrian crossing and access to bus stops along state highways. As the NJDOT maintains the state highway system, it is imperative that the potential solutions are acceptable to the NJDOT in order that solutions developed as part of the study, however seemingly functional, may realistically be implemented.
NCTIP PROJECTS EVALUATE NEW JERSEY’S CONGESTION PROBLEMS
Contact: Sally O’Malley, Technology Transfer Specialist, 973-596-6463 omalley@njit.edu

NCTIP has continuously conducted studies dealing with New Jersey’s severe congestion problems. Mobility and the Costs of Congestion in New Jersey – 2001 Update, and the Garden State Parkway Toll Plaza Removal study were described in the December 2001 Semi Annual Report. Use of Neural Network/Dynamic Learning Algorithms to Predict Bus Travel Times Under Congestion Conditions, and Assess Impacts and Potential Benefits of Traffic Signal Priority for Buses are described in a previous Success Story on Bus Transit Issues. Two recent studies directly address congestion issues for the state:

- **Alternate Performance Measures for Evaluating Congestion**
  Transportation investments frequently must compete with other forms of government spending for scarce resources. Therefore, being able to accurately identify the cost of existing and future congestion is critical and allows decision-makers to develop a more accurate estimate of the potential benefits from the mitigation of congestion. Available and easy to use computer modeling systems allow the integration of congestion cost-benefit analysis within budget planning at the state, county and municipal levels. The goals of this study are to develop computer time-based measures that accurately and effectively describe congestion and mobility in New Jersey. It is generally accepted that there is no single measure that will address all aspects of congestion. A group of measures will need to be identified and applied which will convey a "report card" on New Jersey's congestion. This group will need to be easy to compute, easy to comprehend, easy to compare, and easy to update. NJIT had previously developed an interactive computer software package using Microsoft Access for the “Mobility and the Costs of Congestion in New Jersey” study (February 2000; June 2001). It is anticipated that this package, which interfaces with the New Jersey Congestion Management System DATA, will be enhanced and extended as part of this study.

- **Estimation of Truck Volumes and Flows – Year I**
  Freight transportation plays a vital role in the development and prosperity of New Jersey, transporting more than 283 million tons of freight each year of the 375 million tons of freight to traverse the state. The 1997 Commodity Flow Survey reports 67 percent of the freight tonnage that originates in New Jersey stays in the state. Because of their weight, trucks cause significant degradation of the highway pavements and bridges. A single tractor-trailer can equal the impact of 1000 or more passenger cars. Also, because of their poor operating characteristics, trucks significantly impact roadway capacity, especially on two-lane roads where passing is difficult. The need exists for better methods to estimate truck volumes, percentages and flows on major truck volume facilities such as interstates and principal arterials, as well as on minor arterials with lower truck volumes. Common uses of truck volume information include pavement and design; pavement and bridge management; scheduling resurfacing, reconditioning and reconstruction of highways based on projected remaining pavement life; prediction and planning for freight movements; provision of design inputs relative to the current and predicted capacity of highways; development of weight enforcement strategies; vehicle crash record analysis; environmental impact analysis, including air quality studies; and analysis of alternative highway regulatory and investment policies. The goal of this study is to provide a means for the planning division at NJDOT to quickly and accurately estimate truck volumes, flows and percentages.
Gender and Professional Worklife at State DOTs: A Pilot Study
In research funded by NCTIP, some successful career patterns women have followed to become leaders in state transportation agencies were examined. Evidence from the careers of successful transportation women was used to suggest means of recruiting, retaining and developing women. The study suggested that an era of downsizing and cost cutting over the last decade has had a particularly hard impact on female careers by restricting resources available for networking and exacerbating the heavy time demands transportation work requires - demands particularly difficult to fulfill for women with young children. It was suggested that recruitment of liberal-arts graduates for management posts be expanded and that transportation jobs be explicitly related to social concerns. Mentors were seen as significant – often encouraging employees to leave safe harbors and seek new jobs to attain additional skills and showing faith in a protégé's ability to succeed. Agencies were encouraged to make female managers explicit targets of any campaign to increase mentoring. The study advocated increasing the number of women in policy positions as a means of eventually dimming the heightened scrutiny that successful DOT and authority women currently undergo. Agencies were encouraged to be scrupulous in not reinforcing perceptions that high-level women were anomaly - even taking precautions that their own manuals are gender inclusive. According to the study, the relatively high percentage of successful transportation women who do not have children suggests that agencies are missing out on the talents of people who become mothers before 35. Flexible hours for jobs where this prerogative will not diminish job performance might enable agencies to engage more "career and family" women who need some accommodation for the years when they have small children at home.

A conference on this issue will be presented at NJDOT headquarters in October 2002. A half day development session will spotlight career patterns women have followed to reach executive positions in state and national transportation agencies. Participants will learn how these women attained their high-level positions and which management and decision-making strategies they use in their jobs. The session will offer transportation managers greater understanding regarding how to develop female professionals, and will show how to empower women to take their careers to the next level.

Issues to be explored will include career trajectories, mentoring, networking outside the agency, gender in the workplace environment, and family and work-life synergies. Discussion of career trajectories will involve analysis of unconventional pipelines for bringing women into transportation agencies. Discussion on mentoring will include analysis of the career and social supports mentors provide, exploration of the value of female mentors for female protégés, and the role of formal mentoring programs. The entire session will be geared to public-sector experiences.

The program will include a keynote speech from a woman who has senior executive status in a major transportation agency; a roundtable with five executive-status women, who will take turns answering career-related questions put to them by a training coordinator; and a discussion session the goal of which will be to articulate concrete strategies based on insights gleaned from the keynote speech and roundtable.
In addition to the many transportation professional organization meetings and NCTIP/IITC sponsored stakeholder meetings, Dr. Spasovic has been requested to participate in a number of critical organizations over the past year. A sampling of such meetings is given here.

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<tr>
<th>Group</th>
<th>Area of Impact</th>
<th>Primary Issue</th>
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<tr>
<td>Advisory Council on Port Competitiveness</td>
<td>Regional</td>
<td>Port Competitiveness</td>
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<td>Myron Ronis, Deputy Director, Port Commerce Department of the Port Authority of New York and New Jersey gave a presentation at NJIT on future plans and security issues for the port. Lazar Spasovic and George Fallat, deputy director of the brownfields economic redevelopment project at NJIT participated.</td>
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<td>Council of University Transportation Centers</td>
<td>National</td>
<td>Transportation Research Centers</td>
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<td>Dr. Spasovic was appointed to the 10-member Board/Executive Committee of CUTC that represents major transportation research centers and institutes in the United States.</td>
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<td>Governor’s Interagency Task Force</td>
<td>County</td>
<td>Port Competitiveness</td>
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<td>The task force was created to assist the City of Bayonne in Hudson County in its plans for reuse of the Military Ocean Terminal known as MOTBY. It consists of several commissioners as well as representatives from NJDOT and the North Jersey Transportation Authority. Dr. Spasovic has been appointed to the task force.</td>
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<td>Hudson County Redevelopment Authority</td>
<td>County</td>
<td>Economic Development</td>
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<td>The EPA Brownfields Economic Redevelopment Initiative is designed to empower states, communities, and other stakeholders in economic redevelopment to work together in a timely manner to prevent, assess, safely clean up, and sustainably reuse brownfields. Dr. Spasovic met with the executive director of the Hudson County Redevelopment Authority in August to discuss steps needed to move forward with a major study site.</td>
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<td>Keep New Jersey Moving</td>
<td>State</td>
<td>Transportation Funding</td>
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<td>Keep New Jersey Moving is a coalition administrated by the New Jersey Alliance for Action that seeks to develop strategies for transportation funding on both federal and state levels. Newly appointed State Commissioner of Transportation James Fox confirmed his and Governor McGreevey’s commitment of support and cooperation in a meeting dedicated to TEA 21 attended by top New Jersey transportation, commerce and union executives. Lazar Spasovic was the sole representative of New Jersey universities requested to attend this at this March meeting.</td>
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<td>Leadership Council on Economic Development</td>
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<td>Economic Development</td>
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<td>The Union County Board of Chosen Freeholders invited Dr. Spasovic to participate in a leadership conference on economic development held in December 2001.</td>
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<td>Newark Insiders Forum and Regional Business Partnership Annual Transportation Symposium</td>
<td>Local / Regional</td>
<td>Transportation System / Infrastructure</td>
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<td>This annual event was combined to discuss the effects of improvements to the region’s transportation system on the city’s continued development. With</td>
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proper planning and coordination, it is posited, the infrastructure improvements planned over the next several years that are needed to advance Newark’s revitalization can be put in place. This program will review the timetable for various projects in the Newark region and open a dialogue regarding ways to minimize business disruption. Featured speakers were from NJDOT, the City of Newark, PANYNJ and NJ Transit.

**North Jersey Transportation Planning Authority Freight Initiatives Committee**

Dr. Spasovic is a member of this bi-monthly committee which brings experts and stakeholders together to discuss the wide range of issues concerning freight movement in the region.

**Senator Corzine’s Transportation Task Force**

Lazar Spasovic has been invited to serve as a member of Senator Jon S. Corzine’s Transportation Task Force. He has already met with the Senator for an open discussion on the challenges to be faced in trying to obtain funding for road, rail and bridge projects in New Jersey.

**Transportation by Design: Union County Agenda**

Lazar Spasovic attended this leadership conference on economic development sponsored by the Union County Board of Chosen Freeholders held in Elizabeth in December 2001. As Union County continues to successfully build upon achievements in transportation planning, infrastructure improvements and economic development goals, input and participation from invitees was solicited and encouraged.

**Transportation Crisis Summit**

Sponsored by the New Jersey Alliance for Action, a transportation crisis summit was held in downtown Newark in November 2001. Transportation at NJIT was represented by Drs. William Van Buskirk, university provost, and Lazar N. Spasovic. New Jersey federal and state elected officials, and executives of the New Jersey Alliance for Action, Port Authority of New York and New Jersey, NJ Transit, the Coalition to Keep New Jersey Moving, the Commissioner of the New Jersey Department of Transportation, and former Congressman Robert A. Roe. With the area’s transportation problems all the more obvious following 9/11, many critical needs were highlighted and discussed.

**Transportation Disaster Response Task Force**

As a result of the September 11 terrorist attack, which was visible from the NJIT campus, the North Jersey Transportation Planning Authority formed the Transportation Disaster Response Task Force and has been actively participating in bi-state working groups and committees chaired by the New York Office of Emergency Management (OEM) and Federal Emergency Management Administration (FEMA). Due to the rich nature of information that has been exchanged between these partnering agencies, NJTPA has recognized a need to diversify and enhance its efforts in helping to secure and plan for the potential of future disasters and major disruptions that may affect the region’s transportation network. NJTPA will undertake a comprehensive study to examine areas within the Northern New Jersey and New York transportation network that are critical not only to everyday transportation needs but are essential for use should an unintended failure of some kind severely disrupt service within the network. To this end, an analysis of the region’s transportation system will identify those components of the region’s network that are deemed critical and vulnerable due to the lack of alternate routes or system redundancy. Strategies to provide for system redundancy (multi-modal) are being explored. Lazar Spasovic is a member of this task force.
NCTIP ENCOURAGES UNIVERSITY PUBLICATIONS TO HIGHLIGHT TRANSPORTATION

Contact: Sally O’Malley, Technology Transfer Specialist, 973-596-6463 omalley@njit.edu

In addition to distributing NCTIP publications university-wide, NCTIP constantly feeds material to editors of other NJIT publications to take advantage of all possible platforms for highlighting the excellent research that takes place under NCTIP auspices and availing the Center of the wide distribution of these publications.

<table>
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<tr>
<th>Publication</th>
<th>Description</th>
<th>Date</th>
<th>Articles Carried</th>
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<tr>
<td>News at NJIT</td>
<td>Bi-weekly newsletter that is distributed to all university faculty, administrators, staff and students</td>
<td>8/20/01</td>
<td>Article on new funding for NCTIP</td>
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<td>10/12/01</td>
<td>Extensive article: NJIT Studies Toll Plaza Timesaving.</td>
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<td>11/01/01</td>
<td>“People in the Spotlight” focused on Dr. Janice Daniel, highlighting her research on Identifying Factors and Mitigation Technologies in Truck Accidents in New Jersey.</td>
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<td>African American Professors at NJIT Excel in Research and in Mentoring Younger African Americans: spotlight on Dr. Janice Daniel.</td>
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<td>Murray Center for Women in Technology Annual Newsletter</td>
<td>The Murray Center is a clearing-house for research about women and technology and encourages the continued integration of gender into the curriculum. The Center works together with many other people in the university to attract more women students and faculty to NJIT and produces an annual newsletter.</td>
<td>Fall 2001</td>
<td>Dr. Janice Daniel – Focusing on her transportation research activities on behalf of NCTIP and her active role in recruiting more women and minorities into engineering.</td>
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<tr>
<td>NJIT Alumni Voice</td>
<td>The Voice is a four-color publication that is widely distributed twice a year to all NJIT alumni as well as to faculty, staff and students.</td>
<td>Fall 2001/Winter 2002</td>
<td>Traffic Jam: Can We Solve New Jerseys Congestion Problem? By Kenneth Hausman, Deputy Director IITC. Alumni magazine of NJIT. Article featured information gather during two congestion studies.</td>
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<td>Spring 2002</td>
<td>Dr. Hindy Schachter, highlighting her research on Gender and Professional Worklife at State DOTs: A Pilot Study.</td>
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<td>President’s Report</td>
<td>This is a professionally developed full-color magazine that serves as a report from the President of NJIT to the Boards of Trustees and Overseers administration, faculty and staff and is used in fund-raising and other objectives of the university</td>
<td>2001 NJIT President’s</td>
<td>Evaluating Highway Congestion – a ½ page summary of Lazar Spasovic’s research project Mobility and the Costs of Congestion in New Jersey – 2001 Update.</td>
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<td>Removing Toll Booths – a full page spread on Lazar Spasovic/Kenneth Hausman research project Garden State Parkway Toll Plaza Removal.</td>
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<td>New Jersey Alliance for Action Annual Report</td>
<td>The New Jersey Alliance for Action has sponsored several NCTIP research projects. In its full color Annual Report, <em>For New Jersey’s Future</em>, two NCTIP Research projects were featured.</td>
<td>2001/2002</td>
<td>Traffic Congestion Study based on NCTIP research project <em>Mobility and the Costs of Congestion in New Jersey – 2001 Update</em></td>
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Education
DEGREES OFFERED

The Center supports the following degrees:

Interdisciplinary Program in Transportation: M.S. and Ph.D.
Civil and Environmental Engineering: M.S. and Ph.D.
Industrial and Manufacturing Engineering: M.S. and Ph.D.
Management of Technology: M.S., MBA
Infrastructure Planning, M.S.

Elements of the attempted Masters in Logistics Engineering degree program, which was rejected by the University Board of Trustees in 2001, continue to be housed in both Industrial and Manufacturing Engineering and the School of Management. Talks have been held with Stuart Lipper, graduate advisor of the School of Management to discuss the potential for offering an MBA in Logistics within the School of Management.

CORE TRANSPORTATION FACULTY

Athanassios K. Bladikas
Industrial and Manufacturing Engineering

Steven I. Chien
Civil and Environmental Engineering

Janice R. Daniel
Civil and Environmental Engineering

Lazar N. Spasovic
School of Management

Jian Yang
Industrial and Manufacturing Engineering

CURRENT AFFILIATED FACULTY/PRINCIPAL INVESTIGATORS

Athanassios K. Bladikas, Ph.D.
Chair, Department of Industrial and Manufacturing Engineering
Director, Interdisciplinary Program in Transportation
New Jersey Institute of Technology
Fields of Expertise: Logistics, Transportation Finance, Public Transportation
bladikas@njit.edu

Steven I-Jy Chien, Ph.D.
Associate Professor of Civil and Environmental Engineering and Transportation
New Jersey Institute of Technology
Fields of Expertise: Transportation System Analysis, Urban Transportation Planning, Intelligent Transportation Systems, Traffic Simulation, and Intermodal Transportation Service Planning and Design
chien@njit.edu
Joshua Curley, M.S.
International Intermodal Transportation Center
New Jersey Institute of Technology
Fields of Expertise: GIS, land use, urban planning
curley@njit.edu

Janice R. Daniel, Ph.D.
Assistant Professor of Civil and Environmental Engineering and Transportation
New Jersey Institute of Technology
Fields of Expertise: Traffic engineering and operations; adaptive traffic control systems; transportation safety
daniel@njit.edu

Harold Deutschman, Ph.D.
Professor of Civil and Environmental Engineering
New Jersey Institute of Technology
Fields of Expertise: Urban Transportation Planning, Mass Transit Systems
deutschmanh@njit.edu

Robert Dresnack, Ph.D.
Professor of Civil and Environmental Engineering
New Jersey Institute of Technology
Fields of Expertise: Environmental Impact Analysis; Surface and Air Traffic Induced Air and Noise Quality Impacts; Water Resources
Dresnack@njit.edu

George Fallat, M.S.
Deputy Director, International Intermodal Transportation Center
New Jersey Institute of Technology
Fields of Expertise: Traffic engineering and operations, Transportation design engineering
fallat@njit.edu

Eugene Golub, Ph.D.
Professor of Civil Engineering
Department of Civil and Environmental Engineering
New Jersey Institute of Technology
Field of Expertise: system safety, risk assessment, environmental impact analysis
golub@njit.edu

Joshua Greenfeld, Ph.D.
Associate Professor of Civil and Environmental Engineering
Program Coordinator for Surveying Engineering Technology
New Jersey Institute of Technology
Fields of Expertise: Geographic Information Systems (GIS), Surveying, Systems Integration, Man-Machine Interface
greenfel@njit.edu
Kenneth J. Hausman, M.S.
Deputy Director, International Intermodal Transportation Center
New Jersey Institute of Technology
Fields of Expertise: Transportation planning; travel demand forecasting; transportation economics
kenneth.j.hausman@njit.edu

C.T. Thomas Hsu, Ph. D.
Professor of Civil and Environmental Engineering
New Jersey Institute of Technology
Fields of Expertise: Structural engineering, structural mechanics and designs, structural concrete and computer analysis.
hsuc@njit.edu

One-Jang Jeng, Ph.D.
Assistant Professor of Industrial and Manufacturing Engineering
New Jersey Institute of Technology
Fields of Expertise: Warning Display Designs, Usability Testing, Human Factors in Transportation Systems, Man-System Interface
jeng@njit.edu

Walter Konon, Ph.D.
Professor of Civil Engineering
Department of Civil and Environmental Engineering
New Jersey Institute of Technology
Fields of Expertise: Infrastructure Remediation and Development; Groundwater Decontamination
konon@njit.edu

Rongfang (Rachel) Liu, Ph.D.
Assistant Professor of Civil and Environmental Engineering
New Jersey Institute of Technology
Fields of Expertise: Intermodal transportation planning, travel behavior and demand forecast modeling, operation research and network simulations, GIS and GPS applications in transportation
rliu@adm.njit.edu

Claire McKnight, Ph.D.
Associate Professor of Civil and Environmental Engineering
Institute for Transportation Systems
City College of New York (CCNY)
Fields of Expertise: Operations of urban transit system operations; transportation and safety issues; transportation policy
mcknight@ti-mail.engr.ccny.cuny.edu

Jay N. Meegoda, Ph.D.
Professor of Civil and Environmental Engineering
New Jersey Institute of Technology
Fields of Expertise: Material testing, material specialist, advanced materials, microscopic modeling of material behavior; Environmental: remediation of contaminated soils and sediments; ultrasound to decontaminate dredged sediments; beneficial use of contaminated soils and sediments
Meegoda@NJIT.edu
Sandy Moore, Ph.D.
Associate Professor of Architecture
New Jersey Institute of Technology
Fields of Expertise: Urban redevelopment strategies; public policy analysis; transit-related public access issues; design career discovery
moore@admin.njit.edu

Kyriacos C. Mouskos, Ph.D.
Assistant Professor, Institute for Transportation Systems (ITS)
City College of New York (CCNY)
Fields of Expertise: Transportation systems analysis; transportation network design; traffic control systems; traffic flow theory; intelligent transportation systems; accident analysis; access management
mouskos@tid1s0.engr.ccny.cuny.edu

Edip Niver, Ph.D.
Associate Professor of Electrical and Computer Engineering
New Jersey Institute of Technology
Fields of Expertise: Antenna engineering; electronic toll collection; applications of microwave engineering to transportation; linear antennas for low frequency asymptotics and wavelet applications; indoor wave propagation, robotic applications.
edip.niver@njit.edu

Naomi G. Rotter
Professor of Management
New Jersey Institute of Technology
rotter@megahertz.njit.edu

M. A. Saadeghvaziri, Ph.D.
Professor of Civil and Environmental Engineering
New Jersey Institute of Technology
Field of Expertise: Structural Engineering
ala@njit.edu

Hindy L. Schachter, Ph.D.
Professor of Management
New Jersey Institute of Technology
Fields of Expertise: Public Administration, Communication, Management of Transportation
schachte@njit.edu

Arijit Sengupta, Ph.D.
Associate Professor of Engineering Technology
New Jersey Institute of Technology
Fields of Expertise: Performance Measure & Evaluation, Computer Simulation, Production Scheduling, Inventory Control
sengupta@njit.edu

Darius Sollohub, M.A.
Assistant Professor of Architecture and Associate Director, Masters of Infrastructure Planning

National Center for Transportation and Industrial Productivity
...productivity improvements through transportation
Program
New Jersey School of Architecture
New Jersey Institute of Technology

sollohub@njit.edu

Lazar N. Spasovic, Ph.D.
Professor of Transportation and Management
School of Management and Transportation
New Jersey Institute of Technology

Fields of Expertise: Transportation Systems Analysis, Network Modeling, Freight Transportation, Intermodal Issues
Spasovic@njit.edu

Chi Tang, Ph.D.
Senior Research Project Developer/LAN Manager
National Center for Transportation and Industrial Productivity
New Jersey Institute of Technology

Fields of Expertise: Operations Research, Database Management System, Transactional Web Application Development
tangc@njit.edu

John Tavantzis, Ph.D.
Professor of Mathematics
New Jersey Institute of Technology

Fields of Expertise: Dynamical Systems, Numerical Methods, Control Theory, Equilibrium Network Assignment
tavantzi@njit.edu

Raghavan Srinivasan, Ph.D.
Assistant Professor
School of Aviation and Transportation
Dowling College
srinivar@dowling.edu

Jian Yang, Ph.D.
Assistant Professor of Industrial and Manufacturing Engineering and Transportation
New Jersey Institute of Technology

Fields of Expertise: Supply chain management, logistics and inventory control. combinatorial optimization, dynamic programming, queuing, and simulation
jian.yang@njit.edu

Athanasios Ziliaskopoulos, Ph.D.
Assistant Professor of Civil Engineering
Northwestern University (NWU)

Fields of Expertise: network and combinatorial optimization, stochastic and dynamic models for transport systems, online control and optimization.
a-z@nwu.edu
RESEARCH INCORPORATION INTO CURRICULUM

Eight NCTIP research projects have been incorporated into 13 classes in this past academic year. Two of the projects, *The Uses of State DOT Research: Customer Use of Completed Projects from NJDOT Bureau of Research* (completed 4/00) and *Moving Telecommunications Forward* (completed 6/98) have been providing management classes with working material since the ISTEA funding.

<table>
<thead>
<tr>
<th>Project Number</th>
<th>Project Title</th>
<th>Course Number</th>
<th>Course Title</th>
<th>Principal Investigator/Instructor</th>
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<tbody>
<tr>
<td>995963</td>
<td>Survey of Driver Perceptions of Railroad and Light Rail Warning Devices/Grade Crossings</td>
<td>IE355</td>
<td>Human Design Factors in Engineering</td>
<td>Jeng</td>
</tr>
<tr>
<td>990952* 993988</td>
<td>Moving Telecommunications Forward</td>
<td>HRM 301</td>
<td>Organizational Behavior</td>
<td>Rotter</td>
</tr>
<tr>
<td>990952* 993988</td>
<td>Moving Telecommunications Forward</td>
<td>HRM 606</td>
<td>Human Resource Management</td>
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<tr>
<td>992502 995922</td>
<td>The Mature Driver: Safety and Mobility Issues</td>
<td>HRM 303</td>
<td>Organizational Behavior (E-learning)</td>
<td>Rotter</td>
</tr>
<tr>
<td>992502 995922</td>
<td>The Mature Driver: Safety and Mobility Issues</td>
<td>HRM 606</td>
<td>Human Resource Management (E-learning)</td>
<td>Rotter</td>
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<tr>
<td>992504 995925</td>
<td>Evaluation of Design Ideas for Prevention of Vehicles Entrapment on Railroad Tracks</td>
<td>IE 355</td>
<td>Human Design Factors in Engineering</td>
<td>Jeng</td>
</tr>
<tr>
<td>992504 995925</td>
<td>Evaluation of Design Ideas for Prevention of Vehicles Entrapment on Railroad Tracks</td>
<td>IE669</td>
<td>Human Design Factors in Engineering</td>
<td>Jeng</td>
</tr>
<tr>
<td>992515</td>
<td>Gender and Professional Worklife at State DOTs: A Pilot Study</td>
<td>HRM 301</td>
<td>Organizational Behavior</td>
<td>Schachter</td>
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<tr>
<td>992515</td>
<td>Gender and Professional Worklife at State DOTs: A Pilot Study</td>
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<td>Managing Diversity Org.</td>
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<td>992532</td>
<td>Ironbound Research Project</td>
<td>MIP 601</td>
<td>Interdisciplinary Infrastructure Studio</td>
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<td>Pedestrian Safety and Mobility Aids for Crossings and Access to Bus Stops</td>
<td>IE355</td>
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<td>Pedestrian Safety and Mobility Aids for Crossings and Access to Bus Stops</td>
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<tr>
<td>999511* 995911</td>
<td>The Uses of State DOT Research: Customer Use of Completed Projects from NJDOT Bureau of Research</td>
<td>HRM 301</td>
<td>Organizational Behavior</td>
<td>Schachter</td>
</tr>
</tbody>
</table>

* ISTEA-funded research project, material from which is still being used in organizational behavior courses.

Also, ARCH 321 *Environmental Education* has incorporated transportation issues into the elective undergraduate course that explores in depth the nature of technology, environment, and social order as they relate to studio work. Students act as mentors for pre-college gifted and talented students from the Abington Avenue School in Newark. Sixteen undergraduates and 50 pre-college students were involved in this class.
PROGRAM HIGHLIGHTS

Graduate

- NJIT’s Interdisciplinary Program Transportation at NJIT includes masters and doctoral programs with emphasis in three areas: transportation engineering, transportation planning, or advanced transportation systems and technologies.

- NCTIP has been the catalyst for a transportation/supply chain management focus within the new (fall 2001) MS/MBA program in Management of Technology.

- NCTIP participates in a program at NJDOT’s Trenton, NJ headquarters that enables NJDOT personnel to work toward masters or doctorate degrees without ever visiting the main campus in Newark. NJIT enrolls approximately 10 students a semester at NJDOT.

- NCTIP’s seminar series is advertised university-wide, attracting students across disciplines to explore transportation.

Undergraduate

- NCTIP has been instrumental in designing and implementing undergraduate courses in transportation, and in offering eight annual scholarships to qualified civil and environmental engineering, industrial and manufacturing engineering, or architecture students.

- An elective course within the School of Architecture provides an opportunity for undergraduates to mentor pre-college students (see Abington program, below).

Pre-College

For the past several years NCTIP has supported three pre-college programs with transportation focuses:

- The Summer Transportation Institute involves approximately thirty greater Newark area high school students in the world of transportation five full days a week for three weeks each year. In addition to seminars and design projects, the students work on problem solving in transportation – e.g., planning ramp metering and a trolley schedule for an 8-station system.

- The Abington Avenue School Gifted and Talented Program brings 50 5th through 8th graders from the Newark school to the NJIT campus one day a week during the spring semester. An elective undergraduate class was designed within the New Jersey School of Architecture for undergraduates to mentor the Abington students, challenging both groups to an understanding of the virtual transportation laboratory in which they live.

- Paterson School District Garrett A. Morgan Academy enters its third year in fall 2002 as a transportation and technology academy within the Paterson school district. NCTIP has been providing curriculum design and advisor services in the person of Presidential Award (for Excellence in Science, Mathematics and Engineering Mentoring) winning Professor Hal Deutschman since the academy’s first year in operation. An estimated 25-30 students are in each class. Dr. Deutschman also heads the Summer Transportation Institute (above).
TRAINING COURSES

NCTIP provides a variety of training for state and regional agency personnel. Details may be found under Technology Transfer.

HUMAN RESOURCES

INTERDISCIPLINARY FACULTY HIGHLIGHTS
At present, more than 30 faculty from civil and environmental engineering; electrical and computing engineering, engineering technology, industrial and manufacturing engineering, the New Jersey School of Architecture, the School of Management, the International Intermodal Transportation Center and the Brownfields Economic Redevelopment project are involved in transportation research.

- **Dr. Mei Chen** (Use of Neural Network/Dynamic Algorithms to Predict Bus Travel Times under Congested Conditions) has accepted a tenure-track position as assistant professor of civil engineering at the University of Kentucky at Lexington. She will continue to participate in research on the above-named project.

- **Dr. Steven Chien** co-chaired a seminar, *Maglev Technology and Its Potential Operating Locations*, jointly sponsored by Sigma Xi - NJIT Chapter and ITE & ITS Student Chapters, September 28, 2001.

  Dr. Chien also co-chaired the technical section in the Annual Meeting of International Chinese Transportation Professional Association – United States Northeastern Chapter, September 22, 2001; and chaired the technical section in the Annual Meeting of International Chinese Transportation Professional Association – United States Northeastern Chapter, April 27, 2002; and the transportation session for the American Chinese Management and Educator (ACME) Association Annual Meeting, August 3, 2002.

- **Dr. Janice Daniel** was featured in *News at NJIT*’s 'People in the Spotlight' column. The article highlighted her NCTIP/NJDOT research project, *Identifying Factors and Mitigation Technologies in Truck Accidents in New Jersey*. This project was funded by a $107,000 New Jersey Governor’s Challenge Grant.

  Dr. Daniel is also PI for *Assess Impacts and Potential Benefits of Traffic Signal Priority for Buses* and *Effectiveness of Bus Nubs for Bus Stops*.

  Daniel was also featured in the Murray Center for Women in Technology’s annual newsletter (see appendix).

- **Dr. Eugene Golub**, professor of civil and environmental engineering, was elected major of freehold Township. Golub, a 30-year township resident, previously served on the township committee since 1996 and as deputy mayor from 1998 to 2000. Golub chairs the township's subcommittees on planning, zoning, and engineering. He is co-chair of the township's Open Space Committee. As co-chair, Golub assisted the township in acquiring more than 7,400 acres of permanent open space. He also serves as the township's liaison to the Freehold Township Board of Education and the Freehold Regional High School District Board of Education.
• Dr. Joshua Greenfeld (Water Level Prediction for Transportation Projects) has established a GPS (Global Positioning System) Continuously Operating Reference Stations (CORS) project at NJIT GPS, a satellite-based worldwide positioning system was developed by the Department of Defense for Military as well as a wide range of civilian applications, including mapping and transportation [http://wwwec.njit.edu/surveying/gpsbs.htm].

• Dr. Rachel Liu has completed her first year as a member the core transportation faculty. She joins Drs. Athanassios K. Bladikas, Lazar N. Spasovic, Steven Chien, Janice Daniel and Jian Yang, bringing the dedicated transportation faculty to six as projected in the Strategic Plan. Dr. Liu is currently PI for The Future of Transportation Planning, scheduled for completion in June, 2003, and teaches graduate level courses in mass transportation systems and urban transportation planning.

• Dr. Hindy L. Schachter’s research project, Gender and Professional Worklife at State DOTs: A Pilot Study was featured under the School of Management section of the Alumni Voice, NJIT’s alumni publication. This project is the lead article in NCTIP’s spring 2002 On-Route newsletter.

  - Dr. Schachter is currently working in conjunction with NJDOT on a one-day conference to be held in October 2002 on success for women in transportation agencies. Women who have achieved executive status positions in transportation agencies will be exploring their careers and how women can position themselves for success in this field. Potential audiences are students, faculty, transportation agency managers and women currently working in transportation agencies.

  - Plans are in progress for Dr. Schachter to present a paper called From Research to Practice” in March 2003 in Washington D.C. This is an offshoot of the NJDOT technology transfer grant that includes the October 2002 conference.

  - Dr. Schachter was elected vice-chair of the administrative culture section of the International Political Science Association, and chair-elect of the section for professional and organizational development of the American Society for Public Administration (ASPA).

• Professor Darius Sollohub (Ironbound Research Project) attended discussions with Al Fazio, Vice President for Operations for the Hudson-Bergen Light Rail System (Raytheon) and Dr. Athanassios K. Bladikas, director of the interdisciplinary program in transportation, on issues relating to a proposed certificate program in light rail design and management that would be partly populated by their staff.

• Dr. Lazar N. Spasovic, Director of NCTIP, was appointed to the Governor's Interagency Task Force that will assist the City of Bayonne in its plans for reusing the Military Ocean Terminal (MOTBY) on its waterfront. The City of Bayonne has accepted a plan that calls for mixed port terminal and residential/office space.

  - Dr. Spasovic has been invited to serve as a member of Senator Jon S. Corzine’s Transportation Task Force. He has already met with the Senator for an open discussion on the challenges to be faced in trying to obtain funding for road, rail and bridge projects in New Jersey. The Senator is working toward establishing priorities at this time so that efforts over the next few months can focus on obtaining as much transportation financial assistance as possible for New Jersey.
- Dr. Spasovic has been appointed a member of the Governor’s Transportation Advisory Group as well.

- Dr. Spasovic has also joined the 10-member Board/Executive Committee of the Council of the University Transportation Centers (CUTC).

- The North Jersey Transportation Planning Authority (NJTPA), the local area MPO, has appointed Dr. Spasovic to its Transportation Disaster Response Task Force, the focus of which is to develop immediate, near term and long-term transportation solutions to post 9/11 transportation challenges.

- Dr. Spasovic is also a member of NJTPA Freight Initiatives Committee.

Faculty Awards

- **Dr. Saul K. Fenster**, outgoing president of NJIT, was honored as *Transportation Person of the Year* at the Annual Transportation Awards breakfast of the Regional Business Partnership on May 14, 2002. The honor is given annually to a leader who has contributed to the development and maintenance of northeastern New Jersey’s transportation infrastructure.

- **Dr. John Schuring**, professor and chair of civil and environmental engineering, received the *Thomas Alva Edison Patent Award* presented by the Research and Development Council of New Jersey for pneumatic fracturing, a technique for remediating contaminated soils. Dr. Schuring is a member of the NCTIP advisory board.

- **Dr. Jay N. Meegoda**, professor of civil and environmental engineering, is the lead author of a technical paper selected by the Environmental Multimedia Council of the Environmental and Water Resources Institute of the American Society of Civil Engineers (ASCE) as the *Best Practice Paper*. He also received the ASCE North Jersey Branch *Educator of the Year Award* in recognition of his outstanding contributions to the education of civil engineers. Dr. Meegoda has been principal investigator for several NCTIP research projects, including *Data Research-Materials Laboratory Information System (LIMS)*, which is completing its second phase.

- **Dr. One-Jang Jeng**, assistant professor of industrial and manufacturing engineering, received a $87,000 NIOSH (National Institute for Occupational Safety and Health) *Occupational Safety and Health Training Grant - Safety Engineering for the year 2001-2002*. NIOSH is the research agency of OSHA, U.S. Department of Labor.

- **Dr. Robert Dresnack** (*Economic and Quality of Life Impacts on Route 21 Freeway Construction*) received a *Master Teacher Award* at NJIT’s Annual Fall Awards Ceremony.

  - Dr. Dresnack has also been selected to receive the Consulting Engineers Council of New Jersey (CECNJ) *Educator-of-the-Year Award*. This award is given to an individual who, as a teacher or administrator, has had a positive impact upon the engineering profession. The award will be presented at the 2002 Engineering Excellence Awards Banquet on March 21, 2002 at Rutgers University in New Brunswick.
ALUMNI HIGHLIGHTS
Among transportation graduates NCTIP has followed, an estimated 98 percent are working in transportation or related fields. The following graduates, who were supported by NCTIP during their studies, have achieved significant success in the transportation profession.

- **Dr. Shahid Iqbal** received the first Ph.D. degree in Transportation granted by NJIT in 1994. He has been teaching *Geometric Design of Transportation Facilities (TRAN 552)* as an adjunct professor since 1992. Two years ago he started teaching *TRAN/CE 653, Traffic Safety.* Dr. Iqbal owns a Civil/Traffic Engineering Consulting Firm, Paragon Associates, in Sayreville, New Jersey. He is a registered Professional Engineer in New York.

- **Dr. Maria P. Boilé** received NJIT’s second Ph.D. in Transportation in 1995. She was appointed tenure track assistant professor in the department of civil and environmental engineering at Rutgers University in fall 2001. Dr. Boilé, who serves on NCTIP’s advisory board, previously held appointments as assistant professor with the department of civil and environmental engineering at Lafayette College from 1995-2000 and was visiting assistant professor with NJIT’s department of industrial and manufacturing engineering and NCTIP from January through July 2000. She is co-PI with Dr. Spasovic for the NCTIP research project *Estimation of Truck Volumes and Flows – Year I.* Her research work includes passenger and freight transportation planning, intermodal transportation systems analysis, geographic information system technologies in transportation, intelligent transportation systems and mass transit, and has been sponsored by NJDOT, PennDOT, USDOT, National Center for Transportation and Industrial Productivity, FHWA, AT&T Foundation and the Knight Foundation at Lafayette College.

- **Dr. Mei Chen** received her Ph.D. in Transportation from NJIT in 1999. She was appointed to a tenure track position as assistant professor of civil engineering at the University of Kentucky as of February 2002. While still a student, Dr. Chen developed a sophisticated methodology of network toll design that provides valuable decision support to policymakers for use on a NCTIP research project *Developing an Integrated Congestion Pricing and Traveler Information System,* which was a significant breakthrough in the design of congestion pricing policy and was recognized by her peers in the transportation research community as a development with a great potential for nationwide application. Upon graduation, she was employed as a principal planner for NJIT’s Transportation Information and Decision Engineering (TIDE) Center. In September 2000 she became visiting assistant professor with NJIT’s department of civil and environmental engineering and NCTIP. She remains co-PI with Dr. Steven Chien for NCTIP research project *Use of Neural Network/Dynamic Learning Algorithms to Predict Bus Travel Times Under Congestion Conditions.*

- **Dr. Wu Sun** received his Ph.D. in Transportation from NJIT in 1999 and has been employed since that time as a senior information analyst with NJIT's Transportation Information and Decision Engineering (TIDE) Center. He completed an additional masters degree in computer science in 2000. Dr. Sun's current research interests include transportation network design, transit study, and parking reservation system design. He is especially interested in making transportation applications accessible online; has completed a prototype web-based transit timetable system; and is working on a web-based parking reservation project. Dr. Sun's thesis is titled *Optimization of Urban Traffic Control Strategies by a Network Design Model.*

- **Dr. Nazhat Aboobaker** received her Ph.D. in civil and environmental engineering from NJIT in spring 2001 and is currently employed by the New Jersey Department of Transportation as a project manager within their Division of Research and Technology which oversees...
NCTIP/NJDOT research projects. While at NJIT, Dr. Aboobaker was granted a Presidential Fellowship for the entirety of her program, one of a limited number of fellowships awarded to outstanding doctoral students by the university. She had previously received a master's degree in environmental engineering from NJIT, accomplishing both degrees while maintaining a perfect 4.0 GPA in each as a full-time student.

- **Dr. Agnes Wang** received her Ph.D. in Transportation in fall 2001 and has since accepted a position as a transportation planner with Valley Transportation Corporation (VTA) in Santa Clara, California.

- **Cecilia Kelnhofer-Feeley** received an M.S. in Transportation in 1998 and is currently a Ph.D. student. NCTIP’s *1997 Outstanding Student of the Year*, recipient of the NJIT Presidential Fellowship (one of a limited number of fellowships awarded to outstanding doctoral students by the university) for the past two years, and winner of a $1,000 Women’s Transportation Seminar award, Ms. Kelnhofer-Feeley was completing her M.S. in Humanities and Social Services when she became interested in the transportation field. Before returning to NJIT to pursue her doctorate, she was employed for two years by the North Jersey Transportation Planning Authority as a senior transportation planner. At the request of the university, she served on the Task Force on Graduate Studies and Research for NJIT’s Middle States accreditation process.

- **Lida Mazaheri** received a master’s degree in transportation in 1998 and is continuing doctoral studies. NCTIP’s *1999 Outstanding Student of the Year*, Ms. Mazaheri spent two years as a traffic engineer with the Port Authority of New York and New Jersey, in charge of New York’s LaGuardia Airport. Her responsibility included ensuring the safe and orderly flow of both vehicular and non-vehicular traffic throughout the airport by implementing the latest traffic engineering techniques. She returned in fall 2000 to pursue her Ph.D.

- **Jakub Rowinski** received a masters degree in transportation in 1999, and is continuing studies toward his Ph.D. NCTIP’s *2001 Outstanding Student of the Year*, Mr. Rowinski has been employed since May 2001 as a transportation engineer with NJIT’s International Intermodal Transportation Center (IITC), where he helped produce the significant NCTIP/IITC study, *Ten Year Plan to Remove Barrier Tolls on the Garden State Parkway* (see below) and has performed various transportation analyses for the area of Port Newark/Elizabeth. He was also involved in the NCTIP study *Mobility and the Costs of Congestion in New Jersey* (see below). Mr. Rowinski received his undergraduate degree from Lafayette College in 1995, where his advisor was Dr. Maria Boilé (above)

**STUDENT HIGHLIGHTS**

**Students**

Fourteen students entered the Interdisciplinary Program in Transportation in September 2001, bringing the total student body to 39. Among them are:

<table>
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<tr>
<th>Degree</th>
<th>U.S. Citizens</th>
<th>Permanent Residents</th>
<th>International</th>
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<td>Masters</td>
<td>8</td>
<td>2</td>
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</tr>
<tr>
<td>Doctorate</td>
<td>2</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Totals:</td>
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<td>2</td>
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The breakdown of students is:

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<th>Degree</th>
<th>Incoming</th>
<th>Ongoing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Masters</td>
<td>11</td>
<td>11</td>
<td>22</td>
</tr>
<tr>
<td>Doctorate</td>
<td>3</td>
<td>14</td>
<td>17</td>
</tr>
<tr>
<td>Totals:</td>
<td>14</td>
<td>25</td>
<td>39</td>
</tr>
</tbody>
</table>

**Student Support**

In a typical year, NCTIP has supported:

- Approximately 40 NJIT graduate students from about six different disciplines with **Research Assistantships** to conduct research under the supervision of NJIT faculty. Duties range from academic support to day-to-day operation of administrative offices.

- Eight undergraduate students with scholarships of $2,000 each year through the **NCTIP Undergraduate Scholars Program**. Students from civil and environmental engineering, industrial and manufacturing engineering, or architecture are eligible. To qualify, students must have successfully completed at least two transportation courses and either an independent study, mentored research/development transportation project or faculty supervised agency/industry internship of at least one semester's duration.

- A student who is an employee of a state or regional public transportation agency currently working in transportation with an **Advanced Institute for Transportation Education (AITE) scholarship**. The Scholarship is available to full-time students entering the field of transportation and to part-time students. It is based on a student's academic performance and standing, leadership capacity, communication skills, academic and professional interests, and support from employer for applicants currently working in transportation. The scholarship for full-time students includes a tuition grant for three semesters or up a value of $10,000, monthly stipend for one year (not to exceed $10,000), and research experience working with a faculty member on an active research project. For employees of state and regional transportation agencies, the scholarship includes a tuition grant for four semesters or up to a value of $10,000 and a ten-hour per week paid work release during the semester. The employer must agree to provide paid work release time that will be considered as in-kind match for the grant.

- With the concurrence of the New York State Department of Transportation, an AITE scholarship has been awarded to an NYSDOT employee, Gerald Charleston, who began studies for a Master's degree in Transportation in the Spring 2001 semester

- A student from an external university through its **Annual Student Paper Competition** with $1,000 being awarded to the winning paper. The most recent winner was Chad Harden from the University of California at Irvine.

- An NCTIP student through its annual $1,000 award to its **UTC Student of the Year** designee. Jakub Rowinski, transportation Ph.D. student, received the 2001 award.

In addition, three NCTIP graduate students have received NJIT **Presidential Fellowships**. Recipients are Cecilia Kelnhofer-Feeley, Cheryl Allen-Munley and Lida Mazaheri. A limited number of these fellowships, with average stipends in excess of $14,000, full tuition awards, fees coverage, travel, books and cost of living support, are offered to outstanding doctoral students each year, with emphasis on minorities and underrepresented groups. Students who are approved for
these awards generally have the most outstanding records, often with perfect 4.0 GPAs, as is the case with Ms. Allen-Munley.

**Student Activities**

- **Institute of Transportation Engineers (ITE)** [http://www.transportation.njit.edu/iteclub/index.htm](http://www.transportation.njit.edu/iteclub/index.htm). Student officers for the 2001-2002 academic year are Ph.D. students Bransilav Dimitrijevic (President); Spiros Elefsiniotis (Secretary/Vice President); and Alexios Sideris (Treasurer). The ITE Student Chapter planned several visits to transportation facilities for the fall semester 2001. Unfortunately, the tragic events of September 11, 2001 forced us to cancel our regular field trips due to the heightened security in and around the major transportation facilities in the New York Metropolitan area. Nevertheless, our members were active in attending regular meetings of the ITE NY-NJ Metro Section. Four students attended meeting of the Transportation Research Forum in New York City on December 6, 2001 where we helped in presenting the Transportation Program at NJIT.

Together with the ITS and WTS student chapters (below) ITE organized a holiday party on December 21, 2001. The intention was to invite club members from all three transportation clubs, as well as all graduate students from NJIT, to meet each other and network in an informal atmosphere and enjoy food and drinks. It was also an opportunity for students to meet and chat with faculty members related to Transportation Program. We are very pleased with the turnout - more than 50 students and faculty members attended the party.

The ITE Student Chapter participated in the 81st Annual Meeting of the Transportation Research Board held in Washington, DC, January 13 - 17, 2002. Students organized an NJIT/NCTIP hospitality suite and party at the meeting for about 200 people from various transportation authorities, industry and academia. Funding was supplied by NCTIP and the Graduate Students Association of NJIT.

- **Intelligent Transportation Society of America (ITS).** The ITS executive board for the 2001-2002 academic year consists of Ph.D. students Rajat Rajbhandari (President), Lida Mazahari (Secretary), and Renu Chhonkar (Treasurer). In addition to its regular club meetings and joint meetings with ITE and WTS student chapters, the Institute of Transportation Engineers (ITS) student chapter sponsored a trip to the New Jersey Historical Society’s exhibit on the New Jersey Turnpike that was held in Newark on November 8.

ITS students visited NJDOT Traffic Operations Center at Cherry Hill and Camden in April 2002. Also in April, the group visited the Newark City Subway with John Wilkins of NJ Transit. The schedule included a ride on the new train cars after which NJ Transit delineated their current operations and plans regarding future extensions and improvements of the subway.

- **Womens Transportation Seminar (WTS).** Former architecture and current transportation masters student Susan Herman was elected president of WTS for the 2001-2002 academic year. Doctoral student Cecilia Kelnhofer-Feeley is Secretary. Several Board Meetings have been held in this reporting period.

The NJIT chapter of the Women’s Transportation Seminar (WTS) is compiling a Resume Book and CD to have available for the TRB convention and for future conferences and departmental use. According to Cecilia Kelnhofer-Feeley, students are encouraged to submit re-
sumes whether or not they expect to attend specific conferences. WTS provided sample resumés and tips for preparation. WTS sponsored a resume workshop in October 2001.

In April 2002 WTS presented “North Jersey Regional Transportation Model for Transportation Decision Making” at NJIT during which Cheryl Allen-Munley, transportation Ph.D. candidate, was the presenter.

- **Joint Activities.** In September 2001, the NJIT chapter of Sigma Xi, and the student chapters of ITE and ITS combined to present a seminar by Dr. Rongfang (Rachel) Liu. Her topic was “MAGLEV Technology and Its Potential Operating Locations.” The lecture was in cooperation with the Institute of Electrical and Electronics Engineers (IEEE) New Jersey Chapter. A field trip was organized for transportation students by Dr. Liu to ride the newly opened Hudson Bergen Light Rail system in October.

**MENTORING**

- **The International Intermodal Transportation Center (IITC)** partners closely with NCTIP on numerous research projects and has its own agenda as well. IITC provides graduate students with a wide range of experience and familiarity with numerous state, regional, local and public transportation agencies their public- and private-sector customers and needs.

- **Maher Terminals** a long-time supporter of NCTIP and the university, continues to mentor students, allowing access to its facilities and programs. Roger Nortillo, Executive Vice President of Maher Terminals, is a member of the Advisory Board. Brian Maher, President, is a member of NJIT’s Board of Overseers, and has made significant donations to the university for use in inner city educational programs.

**UTC STUDENT OF THE YEAR**

Jakub Rowinski was selected by NCTIP as 2001 Outstanding Student of the Year. He will receive his award at the January 2002 81st Annual Meeting of the Transportation Research Board, along with $1,000 from NCTIP. Mr. Rowinski began his graduate studies at NJIT in the fall of 1998. He received an M.S. in Transportation in August of 1999 and is continuing studies toward his Ph.D. degree. Concurrently, he has been employed since May 2001 as a transportation engineer with NJIT’s International Intermodal Transportation Center (IITC).

Travel demand modeling, geographical information systems (GIS) and intermodal freight transportation are some of the areas that have been investigated by Mr. Rowinski. His research results have been presented at major international and national conferences including the Transportation Research Board (TRB), Transportation Research Forum (TRF), Institute for Operations Research and the Management Sciences (INFORMS), and National Conference for Undergraduate Research (NCUR). He has co-authored several papers, including a significant NCTIP study, *Mobility and the Costs of Congestion in New Jersey*, which was widely distributed and has been used to further public policy debate in New Jersey. At IITC he has been involved with the *Ten Year Plan to Remove Barrier Tolls on the Garden State Parkway* project and various transportation analyses in the area of Port Newark/Elizabeth.

An active member of TRF, Mr. Rowinski has also served as president of the Institute of Transportation Engineers (ITE) Student Chapter and the Graduate Student Association’s transportation program representative. Mr. Rowinski received a B.S. in Civil Engineering from Lafayette College in May of 1998. At Lafayette, his advisor was Dr. Maria Boilé, who received the 2nd Ph.D. degree in transportation granted by NJIT in 1995 (see previous Success Story).
ANNUAL STUDENT PAPER COMPETITION
NCTIP has once more awarded $1,000 for a winning entry in its annual Student Paper Competition. The 2001 winner was Chad Harden, of the University of California at Irvine, for his entry *System Analysis for Harden 3 Trucking*. Mr. Harden’s student advisor was Dr. Amelia Regan. Harden, a 23-year old native of Torrance, California, recently completed a Master’s degree in structural engineering. He received a B.S. in civil engineering from the University of California, Irvine, in June 2001 with an emphasis in both structures and transportation.

TRANSPORTATION CLASSES AT NJDOT HEADQUARTERS IN TRENTON
NJIT offers transportation courses on location at NJDOT’s main office in Trenton. Students can earn M.S. or Ph.D. degrees in transportation without traveling to Newark for classes. The Trenton location primarily serves students who are NJDOT employees; however, recently there has been an increase in students from the consulting community in central and south Jersey. NJIT holds enough courses at NJDOT’s main building to fulfill all degree requirements. All courses are taught by NJDOT faculty and are eligible for tuition reimbursement where applicable. In addition to transportation courses, students can take courses in engineering management, environmental engineering and computer science, and may also take courses via distance learning and Internet.
Research
Research

Research Projects
Seventeen NCTIP projects were selected during the period July 1, 2001 through June 30, 2002, four of them since January 2002 (Sixteen appear as “New” below and one is already completed. The Feasibility Analysis Study and Conceptual Development Plan for Morris Co. at Picatinny Arsenal was a short-term study that was completed without being initiated as “New” in the July 1, 2001- December 31, 2001 Semi Annual Report. The final report for this project is on the web.)

Four projects are ongoing and they were reported as “new” in the previous year’s annual report. Nineteen projects have been completed since the beginning of the grant.

The projects are listed below in numerical order under each project status heading.

All projects are listed on the NCTIP web site: http://transportation.njit.edu/nctip/research/fresearch.htm.

All project descriptions have been sent to USDOT as per grant requirements. Final reports that have been accepted by the Center and the sponsor agencies appear on the web site both in html and pdf versions.

Research Projects Status

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<th>New</th>
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The following research projects are attributable to NCTIP’s existence:

**New (Civil and Environmental Engineering)**
- Concrete Maturity Meter Implementation – Year II
- Improvement of Continuity Connection Over Fixed Piers – Year II

**Ongoing (Civil and Environmental Engineering)**
- Concrete Maturity Meter Implementation – Year I
- Contamination Arresting Systems
- Correlation Study – Surface Texture versus Air Voids
- Improvement of Continuity Over Fixed Piers – Year I

**Completed**
- Dynamic Flow Control for Urban Freight Movement (NSF)
- Organization and Control of Freight Movement and Roadway Systems
Technology Transfer
Technology Transfer

The Center’s visibility and local/national reputation has been enhanced through collaboration with faculty from other UTC centers; multiple publications; the NCTIP web site; the annual student paper competition (see Success Stories); sponsoring of and participation in numerous conferences; interrelationship with the International Intermodal Transportation Center (IITC) and the brownfields economic redevelopment project; and a vigorous, mutually profitable relationship with NJDOT, among others.

TECHNICAL EXPERTISE

As a public research university, one of the missions of NJIT is to assist the state through technical expertise so that New Jersey officials can make informed decisions on public policy issues. Four of the projects completed by NCTIP under TEA-21 funding have especially high significance for New Jersey:

- Mobility and the Costs of Congestion in New Jersey – 2001 Update
- Ten Year Plan to Remove the Toll Barriers on the Garden State Parkway
- Feasibility Analysis Study and Conceptual Development Plan for Morris County at Picatinny Arsenal
- Technical Analysis Associated with the American Truck Associations, Inc. (ATA) Lawsuit

Methodologies from these studies may be adapted for use nationwide. Full reports of each study may be found on the NCTIP web site: http://transportation.njit.edu/nctip/.

Governor’s White Paper

In addition, NCTIP was approached to provide a White Paper to Governor-Elect James McGreevey in December 2001. Incorporating information gathered from the vast scope of the Center, NCTIP partnered with IITC to respond to a request by the governor’s transition team to provide a white paper in support of his call for the development of a comprehensive transportation master plan with policy and programs designed to address New Jersey’s economic development and infrastructure needs. The paper focused on the significance of the international intermodal transportation corridor to New Jersey in helping use New Jersey resources — access ports, airports, waterways, centers of commerce — the links to the global economy — to their fullest. Calling for a ‘seamless, efficient, interconnected, intermodal 21st Century transit system’ an advanced telecommunications system, and fiscal stability, the paper offered immediate actions, highlighted high priority projects, and recommended the Governor focus on three broad areas in addressing the transportation needs of the state: fiscal conditions, planning and coordination, and management and organization structure.

Pipeline Safety

RSPA is responsible for the safe and secure movement of hazardous materials to industry and consumers by all modes of transportation, including pipelines; coordination of rapid response to transportation emergencies; and advancement of science and technology for national transportation needs. In November 2001, at their request, NCTIP provided information to RSPA on the Center’s expertise in pipeline safety research. Five separate reports were issued following the completion in 1996 of an in-depth two-year study for USDOT’s Office of Pipeline Safety (See appendix).
DISSEMINATION OF RESEARCH RESULTS

In addition to the interdisciplinary program in transportation, NCTIP training has many faces. It takes the form of specific classes aimed at sharing information with a given audience (e.g., NJDOT research staff), a seminar series, and public forums and extends through summaries of research results promulgated nationwide via research publications, newsletters, local media and the NCTIP web site.

Training Sessions

- **ProMPTS**
  In March 2002 the Arkansas State Highway and Transportation Department requested the Access 97 source codes in order to implement ProMPTS in their agency. This brought to 45 the number of nationwide transportation organizations that have been supplied this information on CD.

- **Development of a Simulation/Assignment Model for an ITS Priority Corridor**
  In a day-long meeting at NJDOT headquarters in Trenton, NJ, on March 25, 2002, Dr. Steven Chien and his co-principal investigators presented the progress of *Development of a Simulation/Assignment Model for an ITS Priority Corridor* (web address). A presentation was also given by Dr. Henry Lieu, a highway research engineer with FHWA in Washington, D.C., an expert on traffic modeling. Dr. Lieu addressed state-of-the-art research in the area. A tutorial using the developed model was provided. The project is a collaboration between three universities: NJIT, Northwestern, and City College of New York. The 23 Attendees included representatives of the Federal Highway Administration, New Jersey Department of Transportation; New Jersey Highway Authority, New Jersey Transit, New Jersey Turnpike Authority, North Jersey Transportation Planning Authority; Port Authority of New York and New Jersey, TRANSCOM and the University of Illinois at Urbana-Champaign.

- **LIMS**
  LIMS is a computerized Laboratory Information System designed for NJDOT to integrate the operational functionality of material data filing, processing and transfer. This system standardizes data entry procedures; define performance evaluation measures; analyzes relationships between testing data and field performances; streamlines the project closeout processes; generates summary reports; and communicates with existing NJDOT information systems. A two-year project, LIMS was completed in May 2002.

  Subsequently, two sections of application training for LIMS administrator and technicians were provided at NJDOT headquarters in Trenton. The LIMS-ADMIN database application was demonstrated and exercised with project registration, user-identification, materials design and other administrative tasks. For testing technicians, the LIMS-SQL database-driven web application was illustrated and basic functionalities were tested on report generation, testing results, data input and editing. These training activities provided users with a working knowledge of LIMS and provided valuable improvement information for design in system testing and debugging. Approximately 15 people attended.

- **Paramics Training Seminar**
  Paramics is an advanced suite of software tools for microscopic traffic simulation, developed by Quadstone Limited in Scotland to provide high-performance software engineering and visualization with industry-leading expertise in transportation engineering. NCTIP/IITC have applied this software to several research projects, including *The Ten Year Plan to Remove the...productivity improvements through transportation*
Toll Barriers On the Garden State Parkway; Mobility and the Costs of Congestion in New Jersey – 2001 Update; American Trucking Associations, Inc. (ATA) Lawsuit; and the Picatinny Arsenal Feasibility Study, among others. Training sessions on the software package are being offered by NCTIP/IITC (http://www.transportation.njit.edu/iitc/TechCtr/5_Day.htm). At this writing a 5 day on-site training session is being held for the New York State Department of Transportation in Albany. Ten NYSDOT staff are participating in this training.

• Maturity Measure Workshop
Research done in 1995 on VES concrete showed that the maturity method could predict concrete strength to a reasonable level of certainty. Further work done in 1996 showed that it could be applied to a variety of structures. Unfortunately, the maturity method is not a simple, straightforward test like a slump or compression test. Some preparation is necessary before testing and proper interpretation of the results after the test is needed to reach a satisfactory prediction of strength. In order to give NJDOT personnel the background necessary to implement this method a training program consisting of three major elements was developed, (1) an overview workshop to explain the general goals and means of maturity testing; (2) a laboratory workshop to explain and show the techniques, and finally, field trials that would allow work on actual projects.

A March 1, 2002 workshop was held at NJDOT headquarters in Trenton, led by Professor Allyn Luke, PI for several NCTIP-related research projects. Attended by about 60 people from NJDOT, contractors and concrete suppliers, the main purpose of this presentation was to broadly introduce the maturity method training program and its main components. Two laboratory workshops were held. The first - for NJDOT’s Central and Southern Regions was given on March 22 in Trenton; another for the NJDOT North Region as given at NJIT on May 29, 2002. Field trials were set-up in the three NJDOT regions. The main purpose of which was to familiarize NJDOT personnel with the equipment and provide opportunity for them to experiment with it. For the first trial NJIT personnel were on hand to assist in any aspect of making the measurements and computations.

• Success for Women in Transportation Agencies
A Training Session will be held at the Trenton, NJ headquarters of the New Jersey Department of Transportation in October 2002. The half-day development session will spotlight career patterns women have followed to reach executive positions in state and national transportation agencies. Participants will learn how these women attained their high-level positions and which management and decision-making strategies they use in their jobs. The session will offer transportation managers greater understanding regarding how to develop female professionals, and will show how to empower women to take their careers to the next level. Issues to be explored will include career trajectories, mentoring, networking outside the agency, gender in the workplace environment, and family and work-life synergies. Discussion of career trajectories will involve analysis of unconventional pipelines for bringing women into transportation agencies. Discussion on mentoring will include analysis of the career and social supports mentors provide, exploration of the value of female mentors for female protégés, and the role of formal mentoring programs. The entire session will be geared to public-sector experiences.

As appropriate, principal investigators meet to train sponsor (e.g., NJDOT, NYSDOT) staff in the use of programs developed during research projects’ duration.
Research Data Exchange

NCTIP participates in numerous internal and external events through each year. Those shown below are examples:

- **NJDOT 3rd Annual Research Day**
  NCTIP actively participates in NJDOT’s Annual Research Day to share the results of its active and recent NJDOT research projects with local and regional transportation professionals. The purpose of the Research Day is for NJDOT to present the results of its university research program to colleagues and customers. Attendees include personnel from New York, Connecticut, Pennsylvania and Delaware DOTs as well as all New Jersey transportation agencies and other interested professionals. The number of attendees is approximately 300 each year.

- **Transportation Research Board**
  Each year numerous NCTIP principal investigators disseminate results of their research through papers and presentations at this important national event. Nine papers were presented by NCTIP transportation faculty and graduate students. Ten NCTIP research faculty and staff and 10 transportation graduate students attended. TRB estimates that approximately 8,500 attendees will be on hand to take advantage of approximately 2,200 presentations and papers and more than 500 sessions spanning all areas and modes of transportation.

- **Transaction 2002**
  At this most important annual conference for New Jersey State Professionals, NCTIP displayed video and hard copy information on transportation at NJIT including the education programs. NCTIP’s director moderated a session on *Goods Movement, Railroads and Trucks*. 1,000 people attended the 2002 event.

- **NJDOT Peer Exchange**
  NCTIP and the department of civil and environmental engineering participated in a two-day peer exchange in which DOT members from five states, FHWA and research university partners joined in discussions and information sharing. Approximately 50 people attended this event.

- **NCTIP Web Page**
  Final reports for all research projects are published on NCTIP’s web site as soon as they are accepted by the sponsoring organization. Descriptions of all research projects – active and completed – are available. All NCTIP annual and semi-annual reports are published as well. To date approximately 14,000 visitors have accessed the site.

- **NJDOT Quarterly Progress Meetings**
  NCTIP actively participates in two-day quarterly meetings where principal investigators for active and recent research projects describe their work to the NJDOT research and technology staff and trainees, following which directors of the two participating entities, Drs. Spasovic and Schuring, summarize. Opportunities are available for detailed questioning by the audience. Approximately one hundred NJIT customers participate in each of these events. Because of NJDOT scheduling, 5 quarterly meetings fit into the reporting time frame. Projects presented and discussed are as follows:
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The next Quarterly Progress Meeting at NJDOT is scheduled for Thursday, Sept. 26, and Friday, Sept. 27.

**EXTERNAL MEETINGS**

- **Advisory Council on Port Competitiveness**
  Lazar Spasovic and George Fallat, deputy director of the brownfields economic redevelopment project attended the June 2002 meeting at NJIT. A ‘Ceremonial Resolution to Dr. Fenster for his Service to NJIT and New Jersey’ was presented to the university’s outgoing president. Guest speaker was Myron Ronis, Deputy Director, Port Commerce Department of the Port Authority of New York and New Jersey. His presentation was on future plans for the port and security issues.

- **Council of University Transportation Centers**
  Lazar Spasovic attended CUTC’s Fifth Annual Awards Banquet on January 12, 2002 and the 2002 CUTC Banquet which was held on January 24, 2002.

- **Keep New Jersey Moving**
  Keep New Jersey Moving is a coalition administrated by the New Jersey Alliance for Action that seeks to develop strategies for transportation funding on both federal and state levels. Newly appointed State Commissioner of Transportation James Fox confirmed his and Governor McGreevey’s commitment of support and cooperation in a meeting dedicated to TEA 21 attended by top New Jersey transportation, commerce and union executives. Lazar Spasovic was the sole university representative at this March 11 meeting.
Leadership Conference on Economic Development
December 2001: Dr. Spasovic was invited to participate in Transportation by Design: The Union County Agenda. This Union County Board of Chosen Freeholders’ leadership conference on economic development was held in Elizabeth, NJ.

Morris County Alliance for Action
Lazar Spasovic and Ken Hausman attended the March 22 Morris County Chapter Meeting of the Morris County Alliance for Action. NJ Assemblyman Alex DeCroce spoke on “Traffic - is there a Solution?” followed by Dr. Mark Stout, director of NJDOT’s capital program & funds management and Robert C. Kirkpatrick, president of Keller and Kirkpatrick.

Hispanic Organization of Students in Technology and the Society of Hispanic Professional Engineers 10th Annual HOST/SHPE Gala Banquet and Graduation Ceremony
On behalf of transportation at NJIT, Lazar Spasovic attended this April 2002 occasion. Keynote speaker was Congressman Robert Menendez, who has worked closely with NJIT on transportation issues. Dr. Saul Fenster, outgoing NJIT president, received an award as Engineer of the Year.

NATPO 2001
The 54th Annual Conference of North Atlantic Transportation Planning Officials (NATPO) was held September 9 through 12 in Atlantic City. The theme for the conference was Smart Planning for the New Millennium, and included a presentation by Lazar Spasovic, George Fallat and Ken Hausman.

Newark Insiders Forum and Transportation Symposium
Lazar Spasovic and Ken Hausman attended this November 28, 2001 event that combined the Regional Business Partnership’s annual transportation symposium with the Newark Insiders Forum to discuss the effects of improvements to the region’s transportation system on the city’s continued development. With proper planning and coordination, it is posited, the infrastructure improvements planned over the next several years that are needed to advance Newark’s revitalization can be put in place. This program will review the timetable for various projects in the Newark region and open a dialogue regarding ways to minimize business disruption. Featured speakers were from NJDOT, the City of Newark, PANYNJ and NJ Transit.

NJDOT 3rd Annual Research Showcase
On October 12, 2001, NJDOT hosted its third annual Research Showcase at Princeton University. The major focus of the Research Showcase was to demonstrate to all participants the broad spectrum of transportation research topics with which the NJDOT is involved. This showcase had as its emphasis the issue of solving problems related to goods movement in and out of New Jersey. Each academic partner highlighted ongoing intermodal research projects. In addition, a panel of national experts discussed this very complex topic. NCTIP, which hosted the November 2000 Showcase, was represented by faculty from transportation, civil and environmental engineering, school of management and school of architecture. Dr. Spasovic presented NCTIP and IITC NJDOT-related research, and gave an overview of each center. Dr. John Schuring, chair of the department of Civil and Environmental Engineering, presented NJDOT research projects being done by his faculty.

NJDOT Peer Exchange
A two-day Peer Exchange was held at NJDOT headquarters in Trenton on October 10 and 11, 2001. Department of transportation members from New York, Connecticut, Pennsylvania and Delaware and the Federal Highway Administration joined NJDOT. Research university part-
ners joined in discussions of strategic research directions, technology transfer, among other topics. Representing NJIT, Lazar Spasovic and John Schuring attended.

- **North Jersey Transportation Planning Authority Freight Initiatives Committee**
  On February 19, 2002, a joint presentation on *Rail Operations In New Jersey* was made by Mike Brimmer, CSX Regional VP State Relations, Jim Klaiber, Norfolk Southern-Manager Corporate Affairs, Bob Bailey – president of the Short Line RR Association of New Jersey and vice president of Port New Jersey Railroad; Ted Matthews, NJDOT Director of Aeronautics and Freight; and Richard Wisneski – NJ Transit Manager of Operations Coordination and Planning.

  The April 8, 2002 committee meeting featured a briefing and exchange with members of the CPIP (Comprehensive Port Improvement Plan) consortium and its landside impact in the port district. A presentation was also given by John Hummer, Intermodal Freight Services Manager, NJTPA, and co-director with Lazar Spasovic of the Brownfields Economic Redevelopment Project, regarding a newly proposed task for the FY2003 Unified Planning Work Program.

  The May 29, 2002 meeting focused on New Jersey’s trucking industry, which serves the 25 million people of the huge metropolitan regions in the tri-state New Jersey, New York and Connecticut area as well as the greater Philadelphia-Delaware bay region to the south. 90 percent of all cargo handled in New Jersey is delivered by truck. Presentations were given by Gail Toth, Executive Director of the New Jersey Motor Truck Association, James Snyder, Director of Intermodal Coordination for NJDOT, and Howard Jones, Regional Director, Scandinavian Airline Systems. Kenneth Hausman, Joshua Curley, George Fallat also attended this meeting.

  The June 24, 2002 meeting included as its main topic presentations by the Port Authority of New York and New Jersey and members of the air cargo community

- **RBP Annual Transportation Symposium**
  The Regional Business Partnership combined its Annual Transportation Symposium and Newark Insiders Forum on November 28, 2001 in order to discuss the effects of improvements to the region’s transportation system and Newark’s continued development. Dr. Spasovic attended with Ken Hausman deputy director of IITC.

- **Regional Business Partnership Annual Transportation Awards Breakfast**
  NCTIP filled a table for ten at the Annual Transportation Awards breakfast of the Regional Business Partnership on May 14, 2002. Retiring NJIT president, Dr. Saul K. Fenster, honored as Transportation Person of the Year, was cited for his many achievements to transportation throughout his years with NJIT. RBP had many people to honor following a hugely successful coping with a bridge segment collapse on a major interstate artery here (I-80) last year as well as the many transportation agency responses to 9/11 (PATH, FAA, NY Waterway, PANYNY, NJ Transit). (It was particularly touching to see the woman who so quickly re-routed PATH service away from the WTC that morning receive her award). Jamie Fox, Commissioner of the New Jersey Department of Transportation, was the special guest speaker.

- **RSPA Visit to NJDOT**
  Joedy Cambridge, Marine Intermodal Specialist, visited NJDOT on July 17, 2001. NJDOT assistant commissioners Pippa Woods and Jack Lettiere joined NJDOT Division of Research
and Technology and FHWA staff for a general overview of the research program and the previous Research Showcase. Lazar Spasovic joined NJDOT in a presentation on the Portway project and goods movement in New Jersey. He and George Fallat then joined NJTPA, Rutgers and NJDOT to present on Dredging (New York harbor) and Brownfields. A presentation in the I-95 Corridor coalition was given by NJDOT.

- **Stakeholder Meetings**
  An IITC/NCTIP stakeholder meeting was held at NJIT in July 2001. This was a well-attended workshop, the purpose of which was to provide information and gain feedback on issues associated with brownfields redevelopment for freight related use in the port area. The project team met with stakeholder representatives in September to discuss the project, specific issues the project team has identified and to get feedback on overall direction of the project as well as innovative financing mechanisms to maintain the momentum of the study efforts beyond March 31, 2002 (the end of Phase II).

- **TransAction 2002**
  NCTIP joined the International Intermodal Transportation Center April 15 through the 17th in Atlantic City, NJ for the 26th Annual NJ State Transportation Conference and Expo. A session, *Goods Movement, Railroads and Trucks: CSX Transportation and Norfolk Southern’s Efforts to Get Trucks on Trains and Eliminate Bottlenecks in New Jersey*, was moderated by Lazar Spasovic. The thesis was that terminal constraints in New Jersey and new truck transfer facilities in nearby Pennsylvania are severely impacting highway traffic and delivery of freight in the New Jersey-New York metropolitan region. Speakers for this module were Jim Klaiber, manager – corporate affairs for Norfolk Southern Corporation; Mike Brimmer, Regional Vice President – State Relations, CSX Corporation (NCTIP Advisory Board Member), and Bob Bailey, vice president of the Port Jersey Railroad and president of NJ Short Line Railroad Association.

- **Transportation by Design: Union County Agenda**
  Lazar Spasovic attended this leadership conference on economic development sponsored by the Union County Board of Chosen Freeholders held in Elizabeth on December 7, 2001. As Union County continues to successfully build upon achievements in transportation planning, infrastructure improvements and economic development goals, input and participation from invitees was elicited and encouraged.

- **Transportation Crisis Summit**
  Transportation at NJIT was represented by Drs. William Van Buskirk, university provost, and Lazar N. Spasovic at a November, 2001 Transportation Crisis Summit that included New Jersey federal and state elected officials, and executives of the New Jersey Alliance for Action (sponsor), Port Authority of New York and New Jersey, NJ Transit, the Coalition to Keep new Jersey Moving, the Commissioner of the New Jersey Department of Transportation, and former congressman Robert A. Roe. With the area’s transportation problems all the more obvious following 9/11, many critical needs were highlighted and discussed. Sponsored by the New Jersey Alliance for Action, the summit was held in downtown Newark.

- **Transportation Disaster Response Task Force**
  As a result of the September 11 terrorist attack, which was visible from the NJIT campus, the North Jersey Transportation Planning Authority formed the Transportation Disaster Response Task Force and has been actively participating in bi-state working groups and committees chaired by the New York Office of Emergency Management (OEM) and Federal Emergency Management Administration (FEMA). Due to the rich nature of information that has been ex-
changed between these partnering agencies, NJTPA has recognized a need to diversify and enhance its efforts in helping to secure and plan for the potential of future disasters and major disruptions that may affect the region’s transportation network. NJTPA will undertake a comprehensive study to examine areas within the Northern New Jersey and New York transportation network that are critical not only to everyday transportation needs but are essential for use should an unintended failure of some kind severely disrupt service within the network. To this end, an analysis of the region’s transportation system will identify those components of the region’s network that are deemed critical and vulnerable due to the lack of alternate routes or system redundancy. Strategies to provide for system redundancy (multi-modal) are being explored. Lazar Spasovic is a member of this task force.

The first meeting of the task force was held on November 26, 2001 and included the Federal Transit Administration (FTA), Federal Highway Administration (FHA), NJ Transit, NJ Department of Transportation (NJDOT), NJ Turnpike Authority, NJ Highway Authority, TRANSCOM, NJ Office of Statewide Planning, NY Metropolitan Transportation Council, NY Waterway, NJ State Police, OEM, FEMA and Bergen County.

The January 15, 2002 meeting included activity updates on NJ Transit, the Garden State Parkway, NY Waterway and Bergen County. An overview of the NJ OEM was provided. FEMA provided details of funding and requested data relative to the affects of 9/11 on the transportation system.

The March 15, 2002 meeting of the task force proposed a study with two components: the post 9/11 multi-modal traveling public and post 9/11 goods movement.

**Transportation Research Board National Research Council Visualization in Transportation Symposium and Workshop**

Of significant public and political interest in New Jersey have been the conflicting proposals for removing toll plazas from the Garden State Parkway. NCTIP/IITC addressed the issues in its July 2001 study, Ten Year Plan to Remove the Toll Plazas on the Garden State Parkway. NCTIP/IITC developed and calibrated a 3D simulation model using the Paramics Model, Analysis and Processing package, that was used to test several different future year alternatives as well as capital projects planned throughout the ten-year multi-phase timeline. In April, 2002, Matt Juckes, senior transportation engineer, presented Modeling and Analysis of the Ten Year Plan to Remove the Toll Barriers from the North Eastern Toll Road at the Utah symposium.

**Transportation Research Forum – New York Chapter**

Lazar Spasovic and Gerhardt G. Muller, Professor, U.S. Merchant Marine Academy, presented The Role of Academia in Regional Transportation Planning, reviewing key factors and activities academics should concern themselves with vis-à-vis the many changes influencing the ways that people and freight are moved domestically as well as internationally, which include shifting trade patterns, new and emerging business concepts and technologies, deregulation and potential re-regulation, increasing modal corridor congestion, just-in-time delivery requirements and, most recently, massive increases in security requirements.

**Upcoming Meetings**

- **AASHTO (American Association of State Highway and Transportation Officials) – July 2002.** During this meeting, NJDOT will be showcasing NCTIP’s ProMPTS project.

• Plans are in progress for Dr. Schachter to present a paper at the American Society for Public Administration annual conference From Research to Practice” in March 2003 in Washington D.C. This is an offshoot of the NJDOT technology transfer grant that includes the October 2002 conference.

INTERNAL MEETINGS

• Best Practice Model of NYMTC
Dr. Rachel Liu invited Chiao Guo-an of the New York Metropolitan Transportation Council to give a presentation to her class, Urban Transportation Planning, on May 3, 2002. The presentation was intended to serve as a general overview of the application of the BPM for a typical full regional-scale model run. The presentation was advertised university-wide.

• NJDOT’s Training and Technology Transfer Group
NJDOT’s Training and Technology Transfer Group visited the NJIT campus on March 12, 2002 to discuss Dr. Hindy Schachter’s upcoming proposal/workshop for workforce development to be held at NJDOT’s Trenton headquarters in October 2002, and to be given a current overview of the transportation and civil and environmental engineering graduate programs. The NJDOT team consisted of Fred Schrenk, manager of research and technology policy and administration; Nancy Ciaruffoli, technology transfer coordinator; Bub Kovaks, manager of training and organizational development, and Rudene Vaught, manager of succession planning. Attending for NJIT were Lazar Spasovic, Hindy Schachter and Sally O’Malley for NCTIP, as well as Drs. Bladikas and Schuring, directors of the two graduate programs.

• ARCH 321: Elective mentoring class with Abington Avenue School
In April 2002 Sally O’Malley visited Dr. Sandy Moore’s class to meet with student mentors, teachers and 57 children from Abington’s program for gifted and talented program. The students demonstrated two weight-bearing modules that they were in the process of designing and building as well as plans for model cars made from cans that would use boiling water as a propellant. Later, Ms. O’Malley discussed transportation with the undergraduate architecture students, described NCTIP and how transportation interacts with other programs within NJIT; architecture faculty involved in transportation research; previous architecture students as transportation graduate students.

In May 2002 Ms. O’Malley represented NCTIP in the annual judging of the Abington students/ undergraduate mentors’ transportation-related projects.
BUSINESS DEVELOPMENT

PROPOSALS SUBMITTED

In addition to those that have been accepted for current research projects, NCTIP routinely submits a variety of other proposals. Among them, the following proposals have been submitted in this reporting period:

- **NJDOT**
  
  A total of 12 proposals have been submitted for 2003 in response to 10 NJDOT RFPs.

<table>
<thead>
<tr>
<th>NJDOT Project #</th>
<th>Titles</th>
<th>Proposed Principal Investigator</th>
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<tbody>
<tr>
<td>#02-2002</td>
<td>Corrugated Metal Pipe Deterioration (two proposals submitted)</td>
<td>Konon</td>
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<tr>
<td></td>
<td></td>
<td>Luke</td>
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<tr>
<td>#02-2002</td>
<td>Corrugated Metal Pipe Deterioration (two proposals submitted)</td>
<td>Meegoda</td>
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<tr>
<td></td>
<td><em>Accepted for funding 9/4/02. This proposal received the highest rating of all proposals submitted from the NJDOT research committee.</em></td>
<td>Juliano</td>
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<tr>
<td>#04-2002</td>
<td>Effectiveness of Certain Design Solutions on Reducing Vehicle Speed</td>
<td>Daniel</td>
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<tr>
<td></td>
<td><em>Accepted for funding 9/4/02</em></td>
<td>Liu</td>
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<td></td>
<td></td>
<td>Chien</td>
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<tr>
<td>#06-2002</td>
<td>Seismic Analysis of Retaining Walls, Buried Structures and Embankments combined with #9</td>
<td>Saadeghvaziri</td>
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<td></td>
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<td>Spillers</td>
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<tr>
<td>#11-2002</td>
<td>Handbook of Scour Countermeasure Designs</td>
<td>Saadeghvaziri</td>
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<td>Golub</td>
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<tr>
<td>#16-2002</td>
<td>Traffic Circles/Operational Improvements of Traffic Circles</td>
<td>Chien</td>
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<td>Hausman</td>
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<td>#19-2002</td>
<td>Survey of Transit/Freight Rail Joint Operations Characteristics</td>
<td>Liu</td>
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<td></td>
<td></td>
<td>McMillan</td>
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<tr>
<td>#20-2002</td>
<td>Services to Limited English Proficiency Travelers (web sites, phones, &amp; PA’s)</td>
<td>Liu</td>
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<td></td>
<td>Schachter</td>
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<tr>
<td>#21-2002</td>
<td>Services to Limited English Proficiency Travelers (signs &amp; literature)</td>
<td>Dresnack</td>
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<td></td>
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<td>Lawrence</td>
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<tr>
<td>#22-2002</td>
<td>Improving Public Transit Schedules, Timetables People Can Actually Read</td>
<td>Fallat</td>
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<td></td>
<td></td>
<td>Jeng</td>
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<tr>
<td>#23-2002</td>
<td>Ride Quality Issues</td>
<td>Spillers</td>
</tr>
<tr>
<td>#25-2002</td>
<td>Poisson's Ratio for 2002 Pavement Design (two proposals submitted)</td>
<td>Spillers</td>
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<td>Luke</td>
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<tr>
<td>#25-2002</td>
<td>Poisson's Ratio for 2002 Pavement Design (two proposals submitted)</td>
<td>Hsu</td>
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<td>Meegoda</td>
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- **Evaluation of Transportation Emergency Response Activities**

  In a joint proposal submitted to RSPA in November 2001 by NCTIP and IITC, *Evaluation of Transportation Emergency Response Activities*, NJIT proposed to provide technical guidance and assist in coordinating efforts to develop transportation elements of an emergency response system for northern New Jersey, an area with the highest density of residential and economic activity in the United States. The proposed end products would include a model
simulation and comprehensive list of short and long-term actions to be implemented by various government agencies in response to specific emergency situations such as a disruption of transit service on the Northeast Corridor Line between New Jersey and New York, an evacuation of coastal areas along the Atlantic, and an emergency closure of Newark Airport. The proposed methodology would be readily transferable to other urban core regions of the country. The project is listed on the RSPA public website.

• **Reducing Vehicle Miles Traveled Through Freight-Related Brownfields Redevelopment In Northern New Jersey**
In response to a U.S. Environmental Protection Agency Request for Proposals entitled “On Innovative Projects to Improve Air Quality and Reduce Greenhouse Gases,” NJIT has proposed to team with the North Jersey Transportation Planning Authority, the designated MPO for the northern New Jersey region. The purpose of the proposed study is to examine brownfields sites in the port area and large undeveloped tracts in rural and suburban areas termed collectively as “greenfields. The study would then quantify the reduction in vehicles miles traveled (VMT) and resulting reduction of air pollutants. The results of this study would be used to support air quality improvement initiatives that encourage redevelopment of brownfields versus new greenfield sites development.

• **PennDOT Transportation Research, Education, and Technology Transfer**
NCTIP was solicited by the Pennsylvania Department of Transportation (Penn DOT) to submit a qualifications package in order to provide an easier path to submit proposals, thereby putting NJIT on Penn DOT’s list of potential proposers. In July 2001 Dr. Donald Sebastian, Vice President of Research and Development at NJIT responded on behalf of NCTIP/IITC to the Pennsylvania Department of Transportation’s Invitation to Qualify for its Research, Education and Technology Transfer contract to assist with PennDOT’s goals of advancing innovative research and disseminating the results of such efforts.

• **Mobility and the Costs of Congestion in New Jersey – 2002 Update**
In February 2002 a proposal was submitted to NJDOT for Mobility and the Costs of Congestion in New Jersey – 2002 Update. This study, first released in February 2000, was updated in July 2001 and consideration has been given to an annual update.

• **Success for Women in Transportation Agencies: A Conference**
A proposal was submitted to NJDOT in February 2002 for a fall 2002 conference to be based on Dr. Hindy Schachter’s recently completed research project Gender and Professional Worklife at State DOTs: A Pilot Study.

• **Parking Structure Research**
This proposal seeks support for research on parking structures and how they can be better developed to add value to urban environments. Research activity will follow three categories: the hybridizing of the parking structure with other uses; incorporation of amenities that enhance the role of the parking structure in the city and; emerging technologies that can revolutionize the parking structure as a building type. This research will investigate in detail the factors that impact the form, such as building codes, security issues and real estate practices; survey parking structures that enhance their environments and develop a web-based primer that guides beneficial design for specific urban applications.

• **Study to Determine the Need of Container Freight Monorail System Concept.**
The study proposes to identify and analyze factors that drive the need for new non-truck related marine freight container systems at New Jersey's port facilities. Examples of innovative
systems that are used or under development will be explored and a list of issues and performance criteria pertinent to the Port of Newark, Elizabeth and other New Jersey ports will be prepared.

OTHER

- **USDOT/RSPA evaluation of ongoing technical and project activities related to transportation service and infrastructure security**
  NCTIP responded to the USDOT/RSPA request following expressed concerns regarding transportation safety, security and vulnerability after September 11, 2001. Information on a major multi-year study of gas and hazardous liquid pipelines, completed in 1997, and which came to NJIT because of NCTIP, was submitted to USDOT. *See Appendix.*

- **New Jersey Economic Development Authority (NJEDA)-Potential Partnering**
  NJIT has met with staff from the NJEDA interested in partnering with NJIT in an effort to examine Brownfield sites. NJIT proposes to offer technical assistance to the NJEDA in the assessing the transportation system deficiencies and improvements necessary to accommodate development. This study has received a great deal of media attention and wide support. Commissioner Weinstein spoke at the press conference and emphasized that the study reinforces the importance of committing transportation funds. We will also be meeting with NJDOT on December 19 discuss the integration of the Cost of Congestion Study results into the broader transportation planning process.

- **Hackensack Meadowlands Development Commission (HMDC)**
  A meeting was held with HMDC in July 2001 to present the brownfields study and obtain HMDC assistance to move forward with two sites being studied. HMDC personnel routinely attend the NCTIP seminar series, and this meeting provided an excellent opportunity to network with an agency that may be able to provide future work. A follow-up meeting was held in August with HMDC and Kearny Mayor Santos to discuss/obtain feedback regarding two sites in that area.

- **Hudson County Redevelopment Authority**
  An August 2001 meeting was held with the executive director of the to discuss steps needed to move forward with a major study site.

- **NJDOT**
  NCTIP/IITC met with NJDOT representatives in September to discuss ways NJIT could assist with identification of sites for inclusion in the current Portway model. A follow-up meeting was held.

MEDIA COVERAGE

EXTERNAL

- **Mobility Study – Update 2001**
  A press conference held at the state capitol building in Trenton on October 9, 2001, hosted by NJDOT Commissioner James Weinstein and Philip Beachem of the Foundation for the Alliance for Action to introduce *Mobility and the Costs of Congestion – 2001 Update*
produced the following articles. Dr. William Van Buskirk, university provost, and Dr. Spasovic attended.

10/10/01 Newark Star Ledger – Sitting in Traffic Costly to Jerseyans

10/11/01 Trenton Times – “Traffic Snarls Cost $7.3 billion a Year”

10/14/01 New York Times– Traffic lines cost New Jersey Driver

• New Jersey News Network (NJN)
  NJN interviewed Lazar Spasovic on February 29, 2002 about Governor McGreevey’s plan to consolidate toll authorities. The interview was aired on the public TV network three times that evening.

• The New York Times
  Following the release of the update to Mobility and the Costs of Congestion in New Jersey, the October 14, 2001 issue of the New York Times printed: “Traffic Jam’s Cost: New Jersey drivers each lose 45 hours of time sitting in traffic jams each year, which translates into a cost of $1,255 per driver, or a total of $7.3 billion, according to a study of traffic in 1998 released last week by the New Jersey Institute of Technology done for the New Jersey Department of Transportation. Bergen County roads are by far the most congested, causing drivers to sit in traffic an average of 133 hours a year at a cost of $4,082 in lost time and added gasoline and vehicle operating costs. Traffic is projected to increase by 8 percent by 2005 and 19 percent by 2015.”

• New Jersey Monthly
  In an article on Mass Transit, the August 2001 issue of New Jersey Business magazine states: “In a report released last year, the New Jersey Institute of Technology found that the average New Jersey driver experiences nearly 34 hours of traffic delay annually,” and goes on to quote further statistics from Mobility and the Costs of Congestion in New Jersey – 2001 Update.

INTERNAL

• News at NJIT
  Bi-weekly newsletter that is distributed to all university personnel:
  8/20/01 – Article on new funding for NCTIP
  10/12/01 – Extensive article: NJIT Studies Toll Plaza Timesaving.
  11/16/01 – “People in the Spotlight” focused on Dr. Janice Daniel, highlighting her research on Identifying Factors and Mitigation Technologies in Truck Accidents in New Jersey
  African American Professors at NJIT Excel in Research and in Mentoring Younger African Americans: spotlight on Dr. Janice Daniel.

• Murray Center for Women in Technology Annual Newsletter
  Fall 2001 – Dr. Janice Daniel – Focusing on her transportation research activities on behalf of NCTIP and her active role in recruiting more women and minorities into engineering.

• NJIT Alumni Voice

The New Jersey Alliance for Action highlighted the results of two NCTIP research projects in its 2001/2002 annual report. They are *Mobility and the Costs of Congestion in New Jersey – 2001 Update* and the 2020 *Infrastructure Study* [http://transportation.njit.edu/nctip/research/fresearch.htm]:

“The foundation enjoyed another banner year in 2001 unveiling two major studies that generated statewide attention:

**Traffic Congestion Costs Study**

If the first congestion study in early 2000 created a statewide stir, the later one in August 2001 with which the Foundation was associated was a real blockbuster. It found that traffic costs New Jersey $7.3 billion annually in lost time, fuel consumption, diminished productivity and additional vehicle operating costs. That represented a nearly 50 percent increase over the $4.9 billion cost estimated in the earlier study.

The findings were a highlight of the analysis conducted by the National Center for Transportation and Industrial Productivity at New Jersey Institute of Technology (NJIT). The study was commissioned by the New Jersey Department of Transportation in cooperation with the Foundation.

The NJIT researchers estimated that congestion costs an average of $1,255 per licensed driver and results in 261 million person hours lost each year in traffic delays.

To begin to address the continuing and increasing problem, the report called for stable funding for needed highway and transit improvements and maintenance. It warned that traffic volume in New Jersey is forecast to grow in the future faster than both population and employment.

**Infrastructure Study** (while this article discusses the full report, *Infrastructure: The Key to New Jersey’s Future*, a significant segment of the report is based on NCTIP’s research project *The Alliance for Action 2020 Infrastructure Study*).

New Jersey’s basic infrastructure systems that sustain the state’s economy and quality of life “creak with advancing age, uneven maintenance and inadequate investment.”

That was the warning sounded by two nationally recognized consultants, Nancy Rutledge Connery and Dr. Michael E. Bell in the report, “Infrastructure: The Key to New Jersey’s Future,” commissioned by the Foundation.

Instead of the traditional list of infrastructure needs, the year-long study provided what Alliance President Philip K. Beechem described as a “fresh perspective for New Jersey on how to address the infrastructure demands on a new century.”

A key recommendation called for a region-wide economic vision among New Jersey, New York and Pennsylvania, especially during times of economic slowdown and threats to security. The report called for leading roles by multi-state planning and economic development organizations such as the Port Authority of New York and New Jersey and the Delaware River Port Authority.
The consultants also urged a “broad-based program of public education on the value and workings of the physical environment and infrastructure beginning as early as the elementary schools.”

- **President’s Report**
  Four articles in the 2000/2001 NJIT President’s Report highlighted the dominant role Transportation plays at NJIT. They are:
  - Evaluating Highway Congestion –
  - Removing Toll Booths
  - Redeveloping Brownfields
  - Reducing Truck Accidents

  The complete articles appear in the Appendix.

**PUBLICATIONS**

To disseminate the results of its research, thereby informing transportation professionals nationwide, NCTIP issues three publications – two semiannual and one annual.

- **Research at NCTIP**
  The 2000 issue of NCTIP’s annual national publication tripled the size of the original (1999) issue to highlight NCTIP’s sponsoring of NJDOT’s 2nd Annual Research Showcase. The 2001 issue returned to a more modest format vis-à-vis issue #2, though still more detailed than its first publication. Subtitled “In the Center of the Action,” the magazine featured introductory statements by the NJIT president, New Jersey Commissioner of Transportation, NJDOT Director of Research and Development and the NCTIP Director; highlight five NCTIP/NJDOT research projects; and provided abstracts of all other NCTIP research projects, qualifications of participating faculty/principal investigators, and a details of recent publications and presentations. Research at NCTIP reaches 5,000 transportation professionals nationwide.

- **InTransition**
  Published semi-annually in conjunction with the North Jersey Transportation Planning Authority, the highly respected InTransition reaches about 7,000 readers nationally with each issue. Written in an easy-to-understand style for its broad audience, it is aimed at both transportation professionals and other interested people and includes articles submitted by its national audience with an occasional international feature. The Spring 2000 issue included Memories of Planning the World Trade Center and PATH,” The Marine Industry is in Trouble and We Did It, DVT, A Cautionary Tale, The Sustainable Transportation Solution, and More Good News and More Bad News About Nepal, a follow-up to an earlier article on transportation in Nepal by NJIT transportation doctoral student Rajat Rajbhandari.

  InTransition – Case Studies in Transportation Engineering is listed by the University of Connecticut on a course reading list.

- **OnRoute**
  NCTIP’s semi-annual newsletter details one research project in each issue along with routine publicity for NCTIP, NJDOT, faculty, student and alumni activities and lists of new research projects.
The fall 2001 issue highlighted Dr. Saadeghvaziri’s NCTIP/NJDOT-funded research project *Cause and Control of Transverse Cracking in Concrete Bridge Decks*; and the spring 2002 issue described Dr. Schachter’s *Gender and Professional Worklife at State DOT’s: A Pilot Study*. The newsletter also provides routine publicity for NCTIP, NJDOT, faculty, student and alumni activities and announcements of upcoming events and lists of new research projects. *OnRoute* has a national circulation of 5,000.

- **Holiday Greeting Card**
  NCTIP designed and mailed a holiday card to approximately 2,000 transportation professionals nationwide for a second year.

- **Student Paper Competition**
  At the end of each spring semester, NCTIP sponsors a nation-wide student paper competition that is open to students enrolled in a transportation-related academic program, or those conducting research associated with efficiencies in passenger or freight movement, or facility, institutional and regulatory efficiency. A faculty committee meets over the summer, choosing the winner in a refereed process, and a cash award of $1,000 is given. The deadline for the 2001 competition was June 15. Submitted papers have been distributed to members of a faculty committee and a decision will be made by early fall.

**NCTIP WEB SITE**  [http://www.transportation.njit.edu/nctip/](http://www.transportation.njit.edu/nctip/)

NCTIP continuously updates information on its web site. Research Project descriptions, listed according to appropriate section, feed to the site from an MIS system, as does Directory information. Final reports are published as soon as final approval from the funding agencies is obtained. As appropriate, other research reports are being added. An MIS is being designed which list all publications and presentations on the web, and include them in the Technology Transfer section of the Research Projects.
NCTIP On-Line MIS

A research program monitoring system was designed and is in place for in-house tracking of all NCTIP and CEE projects. Projects are initiated with USDOT from this system, and information updates are transferred directly to the web. Quarterly reports, entered directly by PIs, are collected and e-mailed to NJDOT directly from the database in time for scheduled quarterly PI meetings. A segment is being designed that will transfer publication/presentation/technical report information to the technology transfer sections of each project report. The MIS also includes student support information and the NCTIP mailing list.
Pipeline Study

As a response to the much-publicized pipeline incident in Edison, New Jersey in March 1994, the question was raised again at all governmental levels as to how close should transmission pipelines be sited in residential and commercial areas. One of the responses was the issuance of a contract 70 to NJIT/NCTIP to study this and other issues with regard to pipeline safety.

A National Pipeline Safety Summit was held at NJIT in June 1994. Secretary of Transportation Federico Pena, Senator Frank Lautenberg, George Spadero, Mayor of Edison Township, and numerous people from RSPA, NTSB, state and local government and industry participated.

An intensive study of past transmission pipeline incidents and of the literature on the subject was undertaken; a panel of experts involving representatives from industry and the environment was established and quarterly review meetings were held.

The research performed by NJIT in the area of safe separation distances and land use planning included a review of current OPS regulations with regard to land use; a review of regulations of major industrialized countries related to same; a review of the Federal Energy Regulatory Commission’s (FERC) regulation related to siting of gas transmission pipelines; an analysis of the OPS incident database with regard to the surrounding environment at the respective incident locations, both at the time of installation of the pipeline and at the time of incident; and, lastly, a review of local land use regulations that have evolved as a consequence of the Edison incident.

The two year study concluded that U. S. Pipeline regulations and the current practice of the operators are appropriate to minimizing risk while maintaining the viability of the pipeline industry and found that all the regulations reviewed (i.e., US and international) approach the siting and regulation of pipelines in urban areas in a similar fashion.

According to the study, the siting of new gas transmission pipelines in the United States is in accordance with the regulations administered by FERC which works under the basic assumption that the OPS regulations insure the overall safety of transmission pipelines. An analysis of the incident database showed that, in general, pipelines are sited in rural or undeveloped areas, and that the damage resulting from an incident in highly developed areas is generally less than in rural areas, thus demonstrating the effectiveness of regulations in reducing operating pressures in more densely populated areas.

Five reports were issued:


"Pipeline Accident Consequences for Natural Gas and Hazardous Liquids Pipelines/Pipeline Accident Consequences Analysis Using GIS for Natural Gas and Hazardous Liquids Pipelines," August 1996.

President’s Report


Evaluating Highway Congestion
    Removing Toll Booths
    Redeveloping Brownfields
    Reducing Truck Accidents
Evaluating Highway Congestion

NJIT’s National Center for Transportation and Industrial Productivity (NCTIP) completed a comprehensive study of the costs related to traffic congestion throughout New Jersey. Directed by Lazar Spasovic, professor of management and transportation and executive director of NCTIP, the study found that the cost in lost time, operating cost and wasted fuel in New Jersey is $7.3 billion annually, or $1,255 per licensed driver. In Bergen County, the most heavily congested area of the state, average annual cost per driver is $4,082. Each licensed driver in the state loses an average of 45 hours a year to traffic delays, for a total of 261 million person hours statewide.

The study team recommended that New Jersey must mitigate congestion through a balance between new highway and transit construction with the use of advanced technology such as advanced traffic control and intelligent transportation systems. Employer-based programs such as staggered work schedules and telecommuting were also suggested. If congestion is not reduced, the team reported, the state’s quality of life would be degraded, leading to possible relocation to other states of residents and businesses.

Dr. Lazar Spasovic
Removing Toll Booths

An analysis of traffic congestion at toll plazas on the Garden State Parkway was prepared by NJIT’s National Center for Transportation and Industrial Productivity (NCTIP) and the International Intermodal Transportation Center (IITC). The study, led by Kenneth Hausman, deputy director of IITC, was part of the development of a ten-year plan to remove barrier tolls on the parkway. NCTIP/IITC developed and calibrated a traffic simulation model of the northern fifty-mile section of the Parkway including five barrier toll plazas. The model was used to test several different future year alternatives including maintaining the existing toll plazas; elimination of the barrier toll plazas in one or both directions; and construction of high speed EZ Pass lanes.
REDEVELOPING BROWNFIELDS

NJIT and the North Jersey Transportation Planning Authority (NJTPA) are studying abandoned industrial sites – brownfields – in northern New Jersey to determine their potential for freight-related redevelopment. Intermodal container freight traffic is projected to double in New Jersey over the next decade. Phase I of the Brownfields Economic Development project, directed by George Fallat, deputy director of the National Center for Transportation and Industrial Productivity and James Mack of the York Center for Environmental Engineering and Science, ascertained freight-related businesses would be a good match with New Jersey’s brownfields. In Phase II, the research team is focusing on specific sites in Newark, Kearny, Carlstadt, Jersey City, Carteret and Elizabeth to better understand the opportunities and obstacles involved in freight-related redevelopment.

Site investigations include assessing contamination and estimating remediation costs. Researchers are also conducting community outreach, analyzing transportation needs, evaluating redevelopment options and assessing property values for freight use. The project team is developing a methodology for evaluating brownfields that can be used throughout the state by local governments and private developers. An additional goal is a Transportation and Community Action Plan containing recommendations for infrastructure improvements, redevelopment policies and other measures to facilitate brownfield redevelopment for freight-related activities.
Reducing Truck Accidents

The factors contributing to truck accidents are the focus of a study by Janice Daniel, assistant professor of civil and environmental engineering. With funding from the National Center for Transportation and Industrial Productivity, she seeks to identify statistically significant factors leading to truck accidents in New Jersey and to recommend technologies and strategies that hold the potential for use as countermeasures. According to the National Highway and Traffic Safety Administration, one out of eight traffic fatalities results from collision with a large truck. But truck accidents are generally grouped with auto accidents so that accident analysis does not address specific road conditions and other factors that may affect trucks to a much greater degree than autos. Dr. Daniel is currently analyzing statistical crash data to find common factors in truck accidents.