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Summary

According to the UTC Reporting Requirements for Semi Annual Reports, three sections are required: A. Success Stories, B. Research Project Status, and C. Financial Status. The requirements also request a comparison of actual work performed during the first six months of the grant year versus projected accomplishments and milestones. This section of the report therefore, contains a brief overview of activity from the period July 1 through December 30, 2001 not reported elsewhere.

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. The Center was reauthorized in 1998 by the U.S. Congress 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, and
- Modeling tools for transportation planning, design and operations.

NCTIP, in partnership with its spin-off entity, the International Intermodal Transportation Center (IITC) http://www.transportation.njit.edu/iitc/Home/index.htm, has signally succeeded in these areas. All of the above areas have been/are being addressed in the overarching programs pursuing new and innovative ways of analyzing and modeling transportation issues, and encompassing programs such as the Newark/Elizabeth Portway Program, and the Garden State Toll Barrier Simulation http://www.transportation.njit.edu/NCTIP/research/ResRep.asp?status=Completed&projectNo=87&grantNumber=992500, for example. Courses in Paramics Simulation Software have been designed.

Education

Courses

Fulfilling the commitment in the Strategic Plan to broaden the undergraduate disciplines from which graduate students can be attracted into the transportation program; modernize to keep pace with technology advances; build in greater flexibility by providing a wider range of elective courses; and ensure a closer reflection of the Center's theme within the program, several course additions have previously been reported. In September 2001, CE351: Introduction to Transportation Problems, was introduced. This course is an undergraduate elective for all students, and specifically targets civil engineering students.

NCTIP has been working with the School of Architecture to increase student undergraduate
awareness and generate greater student interest and enrollment in the graduate transportation programs. (One of this past fall’s incoming transportation Masters students is an Architecture graduate.)

ARCH 464: Architectural Design Studio, incorporated public access issues in the redesign of Newark Airport’s monorail station as its undergraduate studio project in September 2001.

A second Architecture course, MIP 601 - Interdisciplinary Infrastructure Studio, has incorporated the Ironbound Research Project into its curriculum (See Success Stories).

Faculty Highlights

NCTIP has committed to engage faculty from various disciplines within NJIT. Additionally, these faculty reflect the growing diversity of the U.S. workforce and are substantially involved in the undergraduate, graduate and professional programs of the Center.

At present, 25 faculty from civil and environmental engineering; electrical and computing engineering, engineering technology, industrial and manufacturing engineering, New Jersey School of Architecture, the School of Management and the International Intermodal Transportation Center are involved in transportation research.

An additional five faculty from City College of New York, Dowling College, Northwestern University and Rutgers University are also involved. Following are some faculty highlights:

- **Dr. Mei Chen** (Use of Neural Network/Dynamic Algorithms to Predict Bus Travel Times under Congested Condition [http://www.transportation.njit.edu/NCTIP/research/ResRep.asp?status=New&projectNo=102&grantNumber=992530]) has accepted a tenure-track position as assistant professor of civil engineering at the University of Kentucky at Lexington (see Success Stories). Dr. Chen was offered a similar position with a second university as well. She will continue to participate in research on the above-named project.

- **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 Technologie in Truck Accidents in New Jersey [http://www.transportation.njit.edu/NCTIP/research/ResRep.asp?status=Ongoing&projectNo=25&grantNumber=992500]. This project was funded by a New Jersey Governor’s Challenge Grant.

Dr. Daniel was also featured in the Murray Center for Women in Technology's Annual Newsletter.

- **Dr. Joshua Greenfeld** (Water Level Prediction for Transportation Projects [http://www.transportation.njit.edu/NCTIP/research/ResRep.asp?status=Ongoing&projectNo=34&grantNumber=992500]) 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://www-ec.njit.edu/surveying/gpsbs.htm] (see Success Stories).

- **Dr. Rachel Liu** (see Success Stories) became a member the transportation faculty as of September 2001. 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 presented a seminar in September 2001 to the NJIT chapter of Sigma
Xi and the student chapters of the Institute of Transportation Engineers and the Society of Intelligent Transportation Systems (see Student Activities).

- **Dr. Naomi Rotter** *(The Mature Driver: Safety and Mobility Issues)* [http://www.transportation.njit.edu/nctip/research/ResRep.asp?status=Completed&projectNo=61&grantNumber=992500](http://www.transportation.njit.edu/nctip/research/ResRep.asp?status=Completed&projectNo=61&grantNumber=992500), member of NCTIP's advisory board, met with Stuart Lipper, graduate advisor at the School of Management to discuss the potential for NJIT's offering an MBA in Logistics within the School of Management.

- **Dr. Hindy Schachter's** research project, *Gender and Professional Worklife at State DOTs: A Pilot Study* [http://transportation.njit.edu/nctip/research/ResRep.asp?status=Completed&projectNo=20&grantNumber=992500](http://transportation.njit.edu/nctip/research/ResRep.asp?status=Completed&projectNo=20&grantNumber=992500) was featured under the School of Management section of the Alumni Voice, NJIT's alumni publication (see Success Stories).

- **Professor Darius Sollohub** *(Ironbound Research Project)* [http://www.transportation.njit.edu/NCTIP/research/ResRep.asp?status=New&projectNo=93&grantNumber=992530](http://www.transportation.njit.edu/NCTIP/research/ResRep.asp?status=New&projectNo=93&grantNumber=992530) has begun discussions with Al Fazio, Vice President for Operations for the Hudson-Bergen Light Rail System (Raytheon) 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** has been 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 task force has several commissioners on it as well as NJDOT and NJTPA representatives. On August 15, 2001, Bayonne accepted a plan that calls for mixed port terminal and residential/office space.

  Dr. Spasovic has also joined the 10-member Board/Executive Committee of the Council of the University Transportation Centers (CUTC). CUTC represents the major transportation research centers and institutes in the United States.

  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, which is chaired by New Jersey Somerset County Freeholder Peter Palmer.

**Awards**

- **Dr. Robert Dresnack** *(Economic and Quality of Life Impacts on Route 21 Freeway Construction)* [http://www.transportation.njit.edu/NCTIP/research/ResRep.asp?status=New&projectNo=106&grantNumber=992530](http://www.transportation.njit.edu/NCTIP/research/ResRep.asp?status=New&projectNo=106&grantNumber=992530) received a Master Teacher award at NJIT's Annual Fall Awards Ceremony. 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.
• **Dr. Eugene Golub** (*Good Neighbor Privacy Fence* [http://www.transportation.njit.edu/NCTIP/research/ResRep.asp?status=New&projectNo=107&grantNumber=992530] and *Economic and Quality of Life Impacts on Route 21 Freeway Construction* [http://www.transportation.njit.edu/NCTIP/research/ResRep.asp?status=New&projectNo=106&grantNumber=992530], received a teaching excellence award at NJIT's Annual Fall Awards Ceremony. Golub, a professor of civil and environmental engineering has recently been elected major of Freehold Township, NJ, after serving on the township committee since 1996. He chairs the township's subcommittees on planning, zoning, and engineering, and is co-chair of the township's Open Space Committee. Golub has assisted Freehold 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.


**Alumni**

NCTIP projected in its 1999-2001 Strategic Plan that graduates would spend their productive lives shaping the future of the transportation profession. Four Ph.D. recipients have remained connected to academia. **Dr. Mei Chen**, who has held several positions within NJIT, has accepted a tenure-track position with the University of Kentucky, effective February 2002 (*see Success Stories*). **Dr. Maria Boilé** continues collaborative research with NCTIP from her position at Rutgers University (*see Success Stories*). **Dr. Shahid Iqbal**, who received the first transportation Ph.D. offered by NJIT in 1994, has been teaching transportation courses as adjunct NJIT faculty since 1992. Dr. Iqbal owns a consulting firm in Sayreville, N.J. **Dr. Wu Sun** has been a senior information analyst with NJIT’s Transportation Information and Decision Engineering (TIDE) Center since receiving his degree in 1999. **Dr. Nazhat Aboobaker**, who received a Ph.D. in Civil and Environmental Engineering in Spring 2001, is currently employed as a Project Manager with the Research and Technology Division of the NJDOT. She completed both her Ph.D. and Masters degrees while maintaining a perfect 4.0 grade point average, was awarded a Presidential Fellowship from NJIT, and is currently adjunct faculty with the civil engineering department at NJIT.

**Students**

Incoming transportation students reflect NCTIP’s determination to increase the number of Americans who are prepared to design, deploy and operate the complex transportation systems that will enhance the country's economic competitiveness in the 21st century. Fourteen students entered the Interdisciplinary Program in Transportation in September 2001, bringing the total student body to 39. Among them are:
<table>
<thead>
<tr>
<th>Degree</th>
<th>U.S. Citizens</th>
<th>Permanent Residents</th>
<th>International</th>
</tr>
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<tbody>
<tr>
<td>Masters</td>
<td>8</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Doctorate</td>
<td>2</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Totals:</td>
<td>10</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

The breakdown of students is:

<table>
<thead>
<tr>
<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>

The Center continues to support students with scholarships and fellowships that pay competitive stipends and tuition. NCTIP has supported 14 students in this time frame. An Advanced Institute for Transportation Education (AITE) Scholarship has been continued for a student from the NYSDOT. The Undergraduate Scholars Program continues to provide 8 awards of $2,000 each per year.

Jakub Rowinski has been selected as NCTIP Outstanding Student of the Year (see Success Stories).

The Abington Avenue School gifted and talented program continues as of Spring 2002. Two other ongoing pre-college programs are described in Success Stories. These three programs foster the goals of minority outreach, transportation futures, and diversity. In addition, Dr. Bladikas continues to visit high schools in surrounding communities as well as those with direct transportation links to Newark. Outreach to women is encouraged through the Society of Women Engineers (SWE) at NJIT and the Women's Transportation Seminar (WTS).

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.

**Student Activities**

- **Institute of Transportation Engineers (ITE)**
  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 also 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 will participate in the 81st Annual Meeting of the Transportation Research Board to be held in Washington, DC, January 13 - 17, 2002. Students will organize an NJIT/NCTIP hospitality suite and party at the meeting. We expect, as before, about 200 people from various transportation authorities, industry and academia to attend our traditional party in the Omni Shoreham Hotel. Funding for this trip will be supplied by NCTIP and the Graduate Students Association of NJIT.

ITE elected officers are Ph.D. students Bransilav Dimitrijevic (President); Spiros Elefsiniotis (Secretary/Vice President); and Alexios Sideris (Treasurer).

- **Intelligent Transportation Society of America (ITS)**
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.

The ITS executive board was elected in September, consisting of President: Rajat Rajbhandari; Secretary: Lida Mazahari; and Treasurer: Renu Chhonkar.

- **WTS**
The new WTS executive board consists of: President Susan Herman and Secretary Cecilia Kelnhofer- Feeley. 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, transportation doctoral student, students are encouraged to submit resumes whether or not they expect to attend specific conferences. WTS provided sample resumes and tips for preparation.

WTS sponsored a resume workshop in October 2001.

WTS is in the process of organizing two events for the spring 2002 semester.

- **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.

On October 24, 2001, a field trip was organized for transportation students by Dr. Liu to ride the newly opened Hudson Bergen Light Rail system.
Research

Following the research selection procedure put forth in the Strategic Plan, NCTIP has been awarded 13 new projects, 12 of which are funded by NJDOT. Ten projects are ongoing from the previous grant year, and 12 have been completed since the beginning of this grant. These projects cover the three NCTIP areas of freight movement efficiency, passenger movement efficiency, and facility, institutional and regulatory efficiency. NCTIP has been extremely successful in generating matching funds (see Success Stories).

NCTIP/IITC/Brownfields Economic Redevelopment Project

NCTIP is conscious of the multimodal and intermodal nature of transportation systems and travel behavior found in the NJ/NY region, a very active hub of freight and passenger activities. In the Strategic Plan, NCTIP stated that: “Gains realized in freight and passenger efficiencies cannot be easily sustained without concomitant efficiencies in facilities, institutions and regulations. A systems approach to transportation planning, design and operations is essential for economic and productivity effectiveness.”

The NCTIP partnership with the International Intermodal Transportation Center and the NJIT/NJTPA brownfields economic redevelopment project has provided a constantly current overview. Several research projects have been generated through these combined efforts (e.g., New Jersey Alliance for Action 2020 Infrastructure Study [http://www.transportation.njit.edu/NCTIP/research/ResRep.asp?status=New&projectNo=45&grantNumber=992500]; Mobility and the Costs of Congestion in New Jersey [http://www.transportation.njit.edu/nctip/research/ResRep.asp?status=New&projectNo=88&grantNumber=992500]; and Garden State Parkway Toll Removal [http://www.transportation.njit.edu/nctip/research/ResRep.asp?status=New&projectNo=87&grantNumber=992500]. Proposals have been made to update the last two projects.

NCTIP’s research labs continue to benefit from the joint venture with IITC. The most sophisticated softwares available for performing research are available to transportation students through this partnership.

Project Descriptions/Final Reports

All research project descriptions are available on the Center’s web site. Final reports are often delayed by review processes within the funding agencies. As soon as reports are accepted as final, they are published on the web.

Research Project Monitoring System

At the outset of a research project, detailed information is required from the PI to enter the project into NCTIP’s MIS and concurrently publish the description on the web site. The project is then initiated with USDOT in accordance with their requirements. Technical and financial progress reports for all projects are required quarterly, and a system exists to assure compliance. PIs for NJDOT projects meet for quarterly progress presentations to NJDOT staff. Deliverables are monitored by the PI and the funding agency (e.g., NJDOT) customer. Approvals of deviations from schedules, budgets or tasks must first have the approval of the funding agency and be subsequently approved by Dr. Spasovic.
Technology Transfer

Publications/Presentations

Publications for this reporting period number 54 peer reviewed transportation research reports/books. Seventeen transportation research papers were accepted for presentation at academic/professional meetings. In addition, 9 project reports were issued. The complete list may be found in the appendix.

See Success Stories for publications/presentations scheduled for the January 2002 TRB meeting and those relating to research funded under the Contract #DTRS 92-G-0011 (ISTEA).

External Meetings

- **TRB:** Dr. Spasovic participated in a TRB meeting in July 2001 chaired by Joedy Cambridge, TRB Marine Intermodal Specialist, in Trenton, NJ. Representing NCTIP and IITC, he joined NJDOT in presenting *Portway/Goods Movement in New Jersey*, followed by *Dredging/Brownfields*, in which he was joined by representatives of NJDOT, the North Jersey Transportation Planning Authority, and Rutgers’ CAIT.

- **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 feed back 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).

- **NATPO:** Dr. Spasovic, George Fallat and Ken Hausman presented on NCTIP, IITC and brownfields research at the 54th Annual NATPO (National Association of Transportation Planning Officials) Conference was hosted by NJDOT in September 2001 in Cape May, NJ. The theme was *Smart Planning for a New Millenium*.

- **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:** The Department of Research and Technology at NJDOT hosted a Peer Exchange at their headquarters in Trenton in October. Attended by DOT personnel from New York, Connecticut, Pennsylvania and Delaware and FHWA, two-day affair covered...
Structured Peer Exchange Topics, Strategic Research Directions, Policy Research, Customer Service and Research Implementation. Research university partners, including Drs. Spasovic and Schuring, joined in a two-hour discussion of Technology Transfer/TT Strategic Plan Research and Technology Web Site, Final Reports and Tech Briefs, Brainstorm Outreach, Marketing and Networking.

- **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.

- **Transportation Research Forum: November 2001:** The New York Chapter of the Transportation Research Forum met for a reception and luncheon at NJTPA. Speakers for the occasion included Theodore H. Matthews, Executive Director of Aeronautics & Freight Services, NJDOT, a principal architect of New Jersey’s freight policy. His topic was “Freight Moves Forward in the Garden State.” This meeting was attended students and faculty from NCTIP.

- **Transportation Research Forum: December 6, 2001:** The New York Chapter of the Transportation Research Forum met for a reception and luncheon in New York City at Giovanni’s Atrium. Speakers for the occasion included Gerhardt G. Muller, Professor, U.S. Merchant Marine Academy, and Dr. Spasovic. Their topic was “The Role of Academia in Regional Transportation Planning,” reviewing key factors and commenting on what activities academics should concern themselves with and how they should act on them, and discussing the current transportation activities of their own institutions. Graduate students from the three student organizations attended this meeting as well.

- **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.

- **The North Jersey Transportation Planning Authority** Transportation Disaster Response Task Force has met monthly since November 2001 to address immediate, near term and long-term transportation solutions to post 9/11 transportation challenges. NJTPA has proposed a post-9/11 comprehensive transportation study, as part of its FY 2003 Unified Planning Work Program, which will involve extensive interagency cooperation. Dr. Spasovic is a member of this task force.

**Upcoming Meetings**

Business Development Activities

Proposals:

• 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, Reducing Vehicle Miles Traveled Through Freight-Related Brownfields Redevelopment In Northern New Jersey, 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.

• 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.

• Evaluation of Transportation Emergency Response Activities: Responding to a RSPA Broad Agency Announcement in December 2001, entitled ‘Ongoing Transportation Service and Infrastructure Assurance Research Activities, NCTIP submitted a white paper. NCTIP was then provided an opportunity to list its submission on the RSPA public website, along with a brief description of the concept. NCTIP 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 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 Newark and New York; an evacuation of coastal areas along the Atlantic, and an emergency closure of Newark Airport. The proposed methodology is readily transferable to other urban core regions of the country.

• Picatinny Arsenal Redevelopment: Picatinny Arsenal is undertaking a study to investigate the feasibility of developing approximately 1500 acres of property FOR RESEARCH/OFFICE PARK. NJIT has been requested to perform an assessment of the transportation impacts.

• Cost of Congestion Update: NJIT is seeking NJDOT funds to update the Cost of Congestion Study. This study would update the results of the “Mobility and the Costs of Congestion in New Jersey” study first completed by the NCTIP in February 2000 and updated in July 2001. A meeting was held in November 2001 with NJDOT to discuss the update as well as NJIT’s potential future role in the Congestion Management System.

Other

• NCTIP responded to the USDOT/RSPA evaluation of ongoing technical and project activities related to transportation service and infrastructure security 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 sent to Robin Kline.

- **New Jersey Economic Development Authority (NJEDA)-Potential Partnering** NJIT has met with staff from the NJEDA is 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.

- A meeting was held with the **Hackensack Meadowlands Development Commission (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.

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

- **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 continued the discussion.

**Media Coverage**

**External**

- **Mobility Study – Update 2001**
    - 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

**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*
Upcoming - 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.

- Alumni Voice – Semi-annual publication to all NJIT alumni.
  

NCTIP Web Site [link](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.

[Image]

A breakdown of the categories shown on the web page may be found in the Appendix.
Section A
Success Stories

The following success stories give samples of successful activity in the reporting period that is in keeping with NCTIP’s Strategic Plan (SP). As projected in the SP, Dr. Rachel Liu is the second new hire in the contract period, bringing dedicated faculty at NJIT to six. The Center is particularly satisfied to see a second graduate accepted for a tenure track position in academia since transportation Ph.D.s were first granted in 1994.

Two of NCTIP’s three Garrett A. Morgan Transportation Futures programs were active in this reporting period (the Abington program takes place in the spring semester), and the young men and women that so enthusiastically participate are indeed a heart-warming experience. The annual Student Paper Competition awarded $1,000 to a University of California Student. The Center not only celebrated Jakub Rowinski for Outstanding Student of the Year, but also was delighted to learn that a former transportation M.S. degree recipient, Nicholas Koncz, was chosen for the same honor by the University of Wisconsin, where he is completing Ph.D. studies.

A successful research project for which NCTIP provided seed money was completed this past fall. The project has already spawned a paper and presentation, and Dr. Schachter is coordinating a conference based on it for fall of 2002. Three new research projects involve collaboration with other UTC researchers and four new projects are addressing safety issues. In continuing partnership with the New Jersey School of Architecture at NJIT, a second Newark community development project has begun. Phase I of the original project was completed within this period.

The partnership between NCTIP and NJDOT continues to flourish. NJIT has been notified of $942,000 in new research granted to NCTIP plus another 124,275 granted to the Department of Civil and Environmental Engineering, a total of more than $1,066,000.

In further community outreach, two NCTIP associates provided significant help during Ground Zero recovery operations. One, Dr. Greenfeld, has established a Global Position System at NJIT, adding to the university’s transportation capabilities. This system was used to help map the site.

Seven papers, 4 presentations and 2 poster sessions have been accepted for the upcoming 81st Annual TRB meeting in Washington D.C. Three transportation publications have been issued within this reporting period, and a holiday card was designed and mailed.

And, finally, although the ISTEA-funded Center Contract # DTRS 92-G-0011 ended in June 1999, knowledge gained during funded research continues to excite faculty/student interest. Nineteen publications/presentations, several of them yet upcoming, have been generated from four of the projects.
RACHEL LIU JOINS TRANSPORTATION FACULTY
Contact: Dr. Rachel Liu, Assistant Professor of Civil and Environmental Engineering, 973-596-5884 – rliu@njit.edu

Dr. Rongfang (Rachel) Liu, who received her Ph.D. in Civil Engineering from the University of South Florida in 1996, has joined the NJIT faculty as an assistant professor of civil and environmental engineering with a joint appointment to the transportation faculty as of September 2001. Prior to accepting the position with NJIT, she was a project manager and senior supervising engineer with PB Transit and Rail Systems, Inc.

Dr. Liu has extensive experience in the area of intermodal transportation planning and engineering, environmental impact and major investment studies (EIS and MIS), and travel demand forecasting and simulation modeling. She has managed/conducted long-range transportation plans for different federal, state, and local government agencies and developed traffic engineering designs for various public and private sector clients. She has gained this broad-based experience through her various positions with consulting firms, research institutes, and government agencies as well as her extensive involvement with Transportation Research Board committees and modeling development task forces.

Combining her advanced educational background and diversified project experiences, Dr. Lui has a firm grasp of theoretical framework and principles of transportation engineering and planning. She also demonstrated her capability of implementing ideas and theories into real world projects through her consulting engineering positions for a number of private and public clients. She has presented and published a number of technical papers for renowned transportation journals such as Transportation Research Board. She is also respected throughout the industry for her modeling skills and intermodal research.

At NJIT, Professor Liu teaches graduate level courses in Mass Transportation Systems and Urban Transportation Planning. Her research interests are intermodal transportation planning, travel behavior and demand forecast modeling, operation research and network simulations, and GIS and GPS applications in transportation. She is a registered professional engineer in Ohio, and is registered with the American Institute of Certified Planners.

Dr. Liu is principal investigator for The Future of Transportation Models project, funded under an NJIT separately budgeted research (SBR) grant, which evaluates the function and implementation of next generation travel demand models such as TRANSIMS. She is also involved in NCTIP’s Effectiveness of Bus Nubs for Bus Stops http://www.transportation.njit.edu/NCTIP/research/ResRep.asp?status=New&projectNa=111&grantNumber=992530.

Liu earned an M.S. in Urban and Regional Planning from Florida State University in 1991; and an M.S. in Environmental Engineering (1987) and B.S. in Geo-Environmental Science (1984) from Beijing University.
1999 GRADUATE JOINS UNIVERSITY OF KENTUCKY FACULTY
Contact: Sally O’Malley, Technology Transfer Specialist, 973-596-6463 – omalley@njit.edu

Dr. Mei Chen, who received her Ph.D. in Transportation from NJIT in 1999, has been appointed to a tenure track position as assistant professor of civil engineering at the University of Kentucky as of February 2002. Since NJIT started granting doctorates in transportation in 1994, she is the second recipient to move on to academia.

While still a student, Dr. Chen developed a sophisticated methodology of network toll design that provides valuable decision support to policymakers for use on Developing an Integrated Congestion Pricing and Traveler Information System, http://www.transportation.njit.edu/NCTIP/research/ResRep.asp?status=Completed&projectNo=49&grantNumber=991912. Testing on an urban roadway network has shown that the implementation of her methodology can effectively reduce the total vehicle travel time by placing tolls on only a very small number of roadway links, which makes the tolling scheme politically viable. This was an important 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. In this capacity Professor Chen has taught Introduction to Urban Transportation Planning and Mass Transportation Systems, and is currently working with Dr. Steven Chien on NCTIP’s Use of Neural Network/Dynamic Algorithms to Predict Bus Travel Times under Congested Conditions http://www.transportation.njit.edu/NCTIP/research/ResRep.asp?status=New&projectNo=102&grantNumber=992530

At the University of Kentucky, Dr. Chen’s duties will include teaching both undergraduate and graduate courses, conducting funded research, and student advising, as well as professional and public services. She will continue to be involved in the Use of Neural Networks project. Her research interests are in the areas of intelligent transportation systems, transportation network modeling, congestion pricing, transportation planning and system analysis.

Dr. Chen’s doctoral dissertation was “A Methodology for Solving the Network Toll Design Problem.” She received an M.S. in Transportation Engineering from Southwest Jiaotong University in Sichuan, China in 1992. She has numerous refereed publications on topics such as:

- Dynamic Freeway Travel Time Prediction Using Probe Vehicle Data: Link-based vs. Path-based.*
- Determining the Number of Probe Vehicles for Freeway Travel Time Estimation Using Microscopic Simulation.
- Factors Affecting the Minimum Number of Probe Vehicles Required for Freeway Travel Time Estimation.
- A Simplified Formulation of the Toll Design Problem
- Multi-model Approach of Urban Passenger Transportation System Analysis.

*Published within this reporting period. See Appendix.
Dr. Maria P. Boilé, who received the second Ph.D. granted by NJIT in Transportation in 1995, 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. Dr. Boilé teaches undergraduate courses in transportation and traffic engineering and graduate courses in Systems Analysis, Traffic Operations and Mass Transit. 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. Her research 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.

She has received several honors and awards including the Student of the Year Award (1994) from the USDOT, the Eno Transportation Foundation, Women's Transportation Seminar, and Intelligent Vehicle/Highway Society of America fellowship awards, and recently a best paper award from the Transportation Research Forum for her paper on Evaluating the Efficiency of Transportation Services on Intermodal Commuter Networks.

Dr. Boilé is a member of the editorial advisory board of Transportation Research Part B and is serving as a reviewer to six international journals. She is a member of several national and international professional societies including ITE, TRF, WTS, INFORMS, ASEE, ASCE and Hellenic ITE, and an active member on various committees. She has been an invited expert participant at the USDOT - Bureau of Transportation Statistics Freight Data Round-Table, and the Steering Committee developing Pennsylvania’s ITS/CVO Business Plan. She was appointed She was appointed to NCTIP’s Advisory Board in 1999, and recently to the Eno Transportation Foundation’s Board of Regents, upon recommendation by the Foundation’s Board of Directors.

The Strategic Plan states NCTIP’s Education goal as a multidisciplinary program of coursework and experiential learning that reinforces the transportation theme of the Center. It also pledges to broaden the undergraduate disciplines from which graduate students can be attracted into the transportation program. The Center’s relationship with the New Jersey School of Architecture (SOA) at NJIT has been a fruitful one, already inducing one student to move to the transportation program as of Fall 2001. Transportation has been included in both undergraduate and graduate level studios at SOA. Below is a description of a course that is designed around the Ironbound Research Project.

A Fall 2001 graduate level studio course, meeting two days a week, is involving an estimated 15 students in a project to investigate the of the I-95 corridor as a linear city and its impact on the Ironbound section of Newark.

The I-95 corridor is defined by spine of the New Jersey Turnpike and includes the many different infrastructures - highway, rail, shipping, fiber optics, etc - that are coiled around it. How this complex linear system functions and how it impacts the Ironbound community - one of the most vibrant, dense, and in the face of larger regional forces, most fragile - will be the focus of the studio.

The research phase will review all current agency studies of the I-95 corridor and the Ironbound community. A review of the linear city concept as developed in the 20th century by architects and planners such as Le Corbusier, Kenzo Tange and others will also occur in this phase. The assessment phase will organize the research findings and ask the Ironbound community to assess them through two focus groups. The final design phase will identify a site within the Ironbound that is directly affected by regional pressures and propose alternative solutions.

The studio’s work, produced by teams organized according to individual skills and interests, will be undertaken as part of an institute wide effort funded through a federal grant which will involve students and faculty from the departments of architecture, transportation and management as well as planners from the New Jersey Department of Transportation and the North Jersey Transportation Planning Authority. The products of the studio will be a report of preliminary findings and web-based presentation to the community and interested agencies. These efforts will support subsequent funded efforts.

The course will continue through the Spring 2002 semester.
The Summer Transportation Institute

Contact: Dr. Harold D. Deutschman, Director, 973-596-2467 – deutschma@njit.edu

In accordance with its Strategic Plan (Section 3.A) NCTIP is committed to expanding minority high school students’ awareness of and interest in transportation careers.

In the summer of 2001, a very successful Summer Transportation Institute was held for rising ninth and tenth grade students. Twenty nine students commuted to NJIT from 20 high schools in 14 cities and municipalities. The program, running from 9:30 a.m. to 4:00 p.m., consisted of transportation design of highways; subdivision design, including layout and internal road networks; and design of a transit schedule, minimizing the number of trolley cars while meeting supply and demand and utilizing acceleration and deceleration rates. Sessions in communications and computer science were included, as well as enrichment in mathematics so the students could have the necessary background for the computations in the transportation module.

A professional engineer was in residence for the three weeks of the program. He directed the project in site design where the students were given a parcel of land with topography and zoning guidelines. In a second project, they also designed the parking and entrance/exit scheme for a shopping center. Seminars were conducted by practicing engineers specializing in transportation, one traffic and highway engineering specialist and one specialist in transportation in engineering.

The class consisted of predominantly minority students with the greater majority being African American and Hispanic. The class profile by ethnic background was 13 African-American, 8 Hispanic, 5 Asian and 3 Caucasian students. There were 18 males and 11 females.

In addition to the seminars and design projects, the students worked on problem solving in transportation – e.g., problems as ramp metering of expressways as well as the trolley transit schedule, which involved an 8-station system. They also learned software programs as Excel and PowerPoint. The class was taught the basics in written and oral communications. They produced reports and made presentations on the results of their projects.
Since an initial contact made with the Paterson, NJ School District at the Transaction 2000 conference, NCTIP has been supporting curriculum design and implementation at the innovative Garrett A. Morgan Academy for high school students. Dr. Harold Deutschman of the civil and environmental engineering department at NJIT, who directs the long-running Summer Transportation Institute, serves as curriculum designer and advisor.

NJIT’s Professor Harold Deutschman first designed and implemented a program for the freshman class of a newly formed academy of transportation and technology under a contract with the New Jersey Community Development Corporation, and with the approval of the Paterson School District in 2000. The academy’s first class consisted of 30 students who elected for an extended school week for a transportation/technology module in addition to their regular academic curriculum.

Effective September 2001, the academy had 25 new students, plus 25 of the original 30 students (5 students transferred back to the regular Paterson high school system). For the freshmen, skills are being developed in the use of scales in obtaining measurements, developing subdivisions, learning computer programs such as Excel, and learning about capacity in highway planning. Students mastered a problem set in designing traffic signal timing and in designing a trolley schedule for an 8-station system. To accommodate students’ regular schedules, sessions in communications were made part of the teaching schedule in the transportation/technology sector. Sophomore students continued with transportation/technology with more advanced problem sets in similar topics. Professor Deutschman is assisting with curriculum design and implementation for the sophomore class, including training and workshops. This will be a transitional year as the Academy will hire a full time transportation teacher to take over the program next year.

The New Jersey Community Development Corporation, which oversees the academy, has been pleased with the positive development of the students in the program. NCTIP is providing additional support to include both classes.
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 Boile, who received the 2nd Ph.D. degree in transportation granted by NJIT in 1995 (see previous Success Story).

Former NJIT Student also receives Outstanding Student of the Year Award

Nicholas Koncz, who received an M.S. in Transportation from NJIT in 1994, is pursuing a Ph.D. in transportation at the University of Wisconsin, where he was chosen UW’s Outstanding Student of the Year.
UNIVERSITY OF CALIFORNIA STUDENT WINS NCTIP 2001 STUDENT PAPER COMPETITION

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

Chad Harden, of the University of California at Irvine, has been chosen winner of NCTIP’s 2001 Annual Student Paper Competition. Mr. Harden received a $1,000 award for his entry, *System Analysis for Harden 3 Trucking*. His student advisory was Dr. Amelia Regan.

Mr. Harden, a 23-year old native of Torrance, California, is currently a studying for 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.

After completion of his master’s degree, Mr. Harden plans to work as an engineer for a company designing and managing public works projects. Downroad, he hopes to start an engineering company of his own that will design such projects for both the public sector and private companies, as well as provide non-profit design services to religious and other non-profit organizations.

Mr. Harden lives in Yorba Linda, California with his wife, Heather, whom he married in August 2001.
With seed money provided by NCTIP to pursue her long-time interest in the exploration of women’s career options in transportation agencies, Dr. Hindy L. Schachter of NJIT’s School of Management has examined some successful career patterns women have followed to become leaders in state transportation agencies – a traditionally male field.

Dr. Schachter found that the last decade was difficult for many DOTs and authorities in terms of reconciling diminishing staff resources and workloads. An era of downsizing and cost cutting may have had a particularly hard impact on female careers by restricting the resources available for networking and by exacerbating the heavy time demands transportation work requires - demands particularly difficult to fulfill for women with young children. As agencies move to increase the number of women leaders, they must understand the experiences of professional women during this era so that they can create programs that address these women’s needs and support their contributions. State agencies have limited ability to make personnel decisions. To a greater or lesser extent they must follow directives from legislatures or state personnel boards. Yet some agency-initiated policies may increase recruiting, retaining and developing female administrators.

Using evidence from her study of the careers of successful transportation women, Dr. Schachter has tried to suggest strategies to maximize use of female capabilities. Some of the conclusions formulated as a result of her research are that recruitment of liberal arts graduates should be expanded for transportation management posts. In this recruitment, transportation jobs should be explicitly related to social concerns; social science faculty and student awareness of how transportation issues impact on social functioning should be increased. Agencies should facilitate mentoring, recognizing mentors and making mentoring a criterion for agency advancement. Employee participation in professional networks should be encouraged. Internal agency communications, such as manuals, should be scrutinized to see that their language and vision are gender inclusive. Where job performance would not be diminished, variants on flexible scheduling should be offered.

Dr. Schachter is coordinating a conference on success for women in transportation agencies, tentatively scheduled for fall 2002. It is planned that women who have achieved executive status positions in transportation agencies will explore 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.

An article based on this research, “Successful Transportation Women in a Time of Downsizing,” has been accepted for Public Administration Quarterly, a peer-refereed journal.

A presentation on aspects of the research was made to the 2000 annual meeting of the Northeast Political Science Association in Philadelphia.
Three collaborative projects involving other UTC Centers are underway at NJIT:

- **Dr. Janice Daniel** of NJIT’s Department of Civil and Environmental Engineering is collaborating with Dr. Raghavan Srinivasan of the School of Aviation and Transportation at Dowling College in Oakdale, Long Island on Assess Impacts and Potential Benefits of Traffic Signal Priorities for Buses [http://www.transportation.njit.edu/NCTIP/research/ResRep.asp?status=New&projectNo=110&grantNumber=992530](http://www.transportation.njit.edu/NCTIP/research/ResRep.asp?status=New&projectNo=110&grantNumber=992530). Traffic congestion is a growing global problem. It is no longer feasible to build our way out of this problem. Encouraging public transportation usage is one way to reduce congestion. Providing signal priority for transit vehicles has been proposed as one way of keeping these vehicles on schedule, reducing delays to the transit vehicle, and leading to more efficient public transit systems. Encouraging automobile drivers to switch to public transportation, however, may require that public transportation, such as buses, be given preferential treatment on the roadway. Bus transportation, therefore, should be designed and operated to provide an attractive alternative to auto travel. One measure aimed at improving surface transit movement is through the use of signal priority for buses. This research will assess impacts and implementation issues associated with the use of bus signal priority in New Jersey; develop operational test plans for implementation at promising locations; and assess the benefit and costs of signal priority. Edward Lieberman, president, KLD Associates is also a research partner for this project.

- **Dr. Steven Chien** is collaborating with Kyriacos C. Mouskos of City College of New York and Athanasios Ziliaskopoulos of Northwestern University as they move into the second year of Development of a Simulation Assignment Model for an ITS Priority Corridor [http://www.transportation.njit.edu/NCTIP/research/ResRep.asp?status=Ongoing&projectNo=117&grantNumber=992530](http://www.transportation.njit.edu/NCTIP/research/ResRep.asp?status=Ongoing&projectNo=117&grantNumber=992530). The primary objective of this research is the development of a planning/simulation tool for an NJDOT ITS priority corridor in New Jersey. In this second phase, simulation, assignment and optimization algorithms will be developed and employed to model the operations of transportation systems. The proposed model will allow experimenting with "what-if" scenarios and evaluating the impact of technologies and systems before they are actually deployed. Identification of ineffective ITS technologies/options could save millions of dollars in deployment, by more efficiently allocating the resources during the planning, design, operations and maintenance phases, while improving the time savings for the motorists.

- **Dr. One-Jang Jeng** is collaborating also with Dr. Raghavan Srinivasan of the School of Aviation and Transportation at Dowling College and George Fallat of IITC on Survey of Driver Perceptions of Railroad and Light Rail Warning Devices/Grade Crossings [http://www.transportation.njit.edu/NCTIP/research/ResReport.asp?status=New&projectNo=108&grantNumber=992530](http://www.transportation.njit.edu/NCTIP/research/ResReport.asp?status=New&projectNo=108&grantNumber=992530). The overall objective of this study is to conduct a human factors survey to understand driver and pedestrian behavior and perceptions at various types of railroad and light rail crossings, and determine their understanding of different types of traffic control devices. The specific objectives of this study are to determine driver (e.g., auto, truck, hazmat carrier, school bus, commercial bus, etc.) and pedestrian behavior and perceptions at the various types of railroad and light rail grade crossings; driver and pedestrian understanding of the various active and passive railroad warning devices at the public railroad and light rail grade crossings in New Jersey; and what information should be included in the New Jersey Driver Manual, Commercial Driver Manual, Motorcycle Driver Manual, and Motorized Bicycle Driver Manual on Railroad and light rail lines; and to recommend and test appropriate questions that should be included in the written Driver and Commercial Drivers exams to insure that all understand the various active and passive railroad and light rail warning devices at New Jersey’s 1600 crossings.
FOUR NEW NCTIP PROJECTS ADDRESS SAFETY ISSUES
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NCTIP has recently been awarded four research projects by NJDOT that address safety issues. Two projects concern pedestrians at bus stops; one addresses fatigue management for rail operations personnel and one surveys driver perceptions of railroad and light rail warning devices.

Drs. Janice Daniel and Walter Konan are researching Effectiveness of Bus Nubs for Bus Stops http://www.transportation.njit.edu/NCTIP/research/ResRep.asp?status=New&projectNo=111&grantNumber=992530. A nub is a treatment made to a sidewalk extending the sidewalk and curb at an intersection into the street a distance equal to the depth of a typical parallel parking space. A bus nub has a bus stop located at the nub. Nubs reduce the amount of exposure pedestrians have to roadway vehicles, resulting in an increase in pedestrian safety. With nubs, buses remains in the travel lane rather than weaving into and out of traffic. Removing this weaving has the potential of reducing conflicts between buses and other vehicles on the roadway as buses need not merge back into traffic. This research proposes to provide state-of-the-practice information on the design and implementation of bus nubs and provide information on how bus nubs can best be used to improve bus transit operations.

Pedestrian Safety and Mobility Aids for Crossings and Access to Bus Stops http://www.transportation.njit.edu/NCTIP/research/ResRep.asp?status=New&projectNo=113&grantNumber=992530 is being studied by Dr. One-Jang Jeng and George Fallat of IITC. 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, which are becoming more recognized as an integral part in making mass transit and other alternative transportation modes successful. This research will use a human-centered approach for evaluating an array of creative solutions to address pedestrian crossing and access to bus stops along state highways that will be acceptable to NJDOT in order that solutions developed as part of the study may realistically be implemented.

Dr. Jeng is also working with Dr. Raghavan Srinivasan of Dowling College and George Fallat to research Survey of Driver Perceptions of Railroad and Light Rail Warning Devices/Grade Crossings http://www.transportation.njit.edu/NCTIP/research/ResRep.asp?status=New&projectNo=108&grantNumber=992530. A recent study of railroad crossings by the NTSB concluded that the standard signs mandated by the Manual of Uniform Traffic Control Devices fail to communicate to drivers what action is needed at a crossing. Another recent study found that many drivers do not fully understand what is required of them when they encounter a flashing light signal at a railroad crossing. To improve safety at railroad and light rail crossings, this research is studying driver perceptions and behavior at railroad and light rail crossings. A new driver manual section will be developed to provide the reader with clear and concise information about different types of railroad/light rail crossings and the appropriate response under these situations.

In Fatigue Management, Rail Operations Personnel http://www.transportation.njit.edu/NCTIP/research/ResRep.asp?status=New&projectNo=105&grantNumber=992530, Dr. Jeng and George Fallatt address operator fatigue, a significant safety issue in the railroad industry. Operator fatigue has serious consequences, not only in terms or impaired service, but can lead to serious injury. It has been identified as a probable factor in a number of major crashes and costly incidents, such as recent crash of a BWI airport subway train, the Exxon Valdez tanker spill and the collision of New York City subway trains on the Williamsburg Bridge. Experts agree that through better fatigue management, these types of serious incidents can be significantly reduced and that the overall level of safety and performance can be improved. This research will provide acceptable methods to quantitatively measure operator fatigue and produce practical and credible guidelines for meeting applicable rules and regulations, addressing management and staff personnel concerns and meeting current and future demands of NJ Transit's rail passenger customers. The results of the project are intended to improve safety and reduce the turnover of skilled rail operations personnel in NJ Transit.
IRONBOUND RESEARCH PROJECT  

Contact: Professor Darius Sollohub, Associate Director, Masters in Infrastructure Planning Program, New Jersey School of Architecture, 973-596-5574 – sollohub@njit.edu

NCTIP continues its association with community renewal projects through its relationship with the New Jersey School of Architecture.

The Infrastructure Design Lab of the New Jersey School of Architecture, with the assistance of NCTIP, is working with the business improvement district (BID) of the historic Ironbound section of Newark to study various plans that have been prepared for the BID over time in order to provide a fully informed platform for subsequent work; define the scope of such work; and assist the BID in submitting for agency support from the Office of State Planning, the Urban Enterprise program, and other appropriate sources. The exploratory phase will be followed by a more comprehensive campaign that will engage NJIT faculty and studio courses in the near future. Assessments of existing conditions and design recommendations for housing, traffic, parking, public space, streetscapes, etc. will be provided.

The railroad tracks surrounding this Newark neighborhood have both given it its name and the relative sensation of isolation that attracted many industries over time and preserved its uniqueness. The completion of the Morris Canal and the introduction of rail service dating back to the 1830s provided magnets for the founding of the iron, chemical, tanning, leather and other industries that took root and flourished in the area. Continuous waves of immigrants, originally from eastern and southern Europe were drawn to Ironbound. More recent arrivals have been from Portugal, Spain and Latin America, although it is estimated that more than 40 different ethnic groups live in this one colorful section of Newark. Today’s Ironbound symbolizes the industrial might and creativity of Newark’s eastern sector. The neighborhood is characterized by its unique mingling of residential housing with industry. Although change has come slowly, new compact homes are among the best kept in the city. Ironbound today is bordered by several major highways. Despite its problems with air pollution and traffic congestion, Ironbound has maintained considerable charm as a neighborhood of one and two-story houses built tightly together along narrow, clean streets, many of them lined with mature sycamore trees. The Ironbound has been carefully preserved - and even improved. Family and community ties are strong, numerous restaurants and small businesses thrive, and the crime rate is one of the lowest in the city. The area’s success is often attributed to fierce neighborhood spirit, hard work, pride in home ownership, and mutual respect for the traditions of each group. By holding fast to these traits, Ironbound people have kept their community both attractive and distinctive. (www.ironboundbusiness.org).

Over time, many overlapping plans and studies have been prepared for the Ironbound and the surrounding areas that impact it. The objective of this research project is to provide the Ironbound with the informed planning guidance it needs to make choices about its future.

The relationship between NCTIP and NJDOT continues to prosper:

- **NCTIP** has been notified of $942,000 in awards from NJDOT for 13 research projects. These projects will begin in January 2002. NCTIP, which has traditionally received approximately $250,000 each year from NJDOT, received $675,700 for the period July 1, 2000 through June 30, 2001. The new grants already exceed last year’s grants by $266,300 (see Research Section for list of projects). Ten NCTIP/NJDOT projects are ongoing as of 12/31/01, accounting for an additional $457,000 in NJDOT funds. These figures do not include matching amounts. NCTIP also received $54,000 from NJDOT for Technology Transfer projects.

- The **Department of Civil and Environmental Engineering** has been notified of $124,300 in projects to begin January 2, 2002, attributable to the existence of the Center. CEE also has ongoing NJDOT projects totaling $748,000 in NJDOT funds.

- The **ProMPTS** (Project Management and Progress Tracking System) project demo CD has now been distributed to transportation officials nationwide. The program continues to be demonstrated (e.g., July 2001 presentation to the Research Advisory Committee (RAC) Regional Meeting of the American Association of State Highway and Transportation Officials (AASHTO) in Providence, RI, the Transportation Research Board, and various states’ DOT officials; and October 2001 demonstrated to the national AASHTO RAC meeting in Montana. The current phase of the project has been extended, and notification has been received from NJDOT of another maintenance plan segment to begin in 2002.

- NCTIP actively participated in **NJDOT’s Third Annual Research Showcase**, which was held in October 2001 at Princeton University. The major focus of the 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 solving problems related to goods movement in and out of New Jersey, which directly addressed NCTIP’s freight movement efficiency mandate. 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.

- In October 2001 NJDOT’s Department of Research and Technology hosted a **Peer Exchange** at their headquarters in Trenton. This two-day conference was attended by DOT personnel from 5 states and the FHWA, as well as university partners. During the Exchange, Drs. Spasovic and Schuring joined in a two hour discussion of Technology Transfer/TT Strategic Plan Research and Technology Web Site, Final Reports and Tech Briefs, Brainstorm Outreach, Marketing and Networking.

- **Quarterly Progress meetings** continue to be half-hour presentations four times a year as principal investigators for each NCTIP and CEE project demonstrate their progress for NJDOT staff. These presentations have been widely praised by NJDOT staff who have opportunities to question the investigators about their projects, and by USDOT for their innovation. Eleven NCTIP projects and 7 CEE projects were discussed during a typical recent meeting. General discussions led by Drs. Spasovic and Schuring (CEE Chair) wound up the full day’s sessions.

- **Technology Transfer**: Both Research at NCTIP and ONRoute publications highlighted successful NCTIP/NJDOT research projects. NCTIP has offered assistance to NJDOT for a publication planned for release in 2002. Other areas of cooperation are being discussed.
NCTIP Faculty and Graduate Students Participate in TRB

NCTIP PARTICIPATION IN UPCOMING TRB MEETING
Contact: Sally O’Malley, Technology Transfer Specialist, 973-596-6463 – omalley@njit.edu

NCTIP faculty and students have been notified of the following papers accepted for presentation at the 81st Annual Meeting of the Transportation Research Board to be held January 2002 in Washington D.C., and publication to the CD-Rom.

- Chien, Steven I.J., and Chandra Mouly Kuchipudi, Dynamic Travel Time Prediction with Real-time and Historical Data.

- Daniel, Janice, Rajat Rajbhandari and Steven Chien, Evaluation of Truck Crashes on the National Network.

- Daniel, Janice, Chuck Tsai and Steven Chien, Factors Influencing Truck Crashes on Roadways with Intersections.

- Chien, Steven, Guangcheng Li, and Janice Daniel, GIS-Based Truck Accident Information and Management System for New Jersey Roadways.

- Goulias, Dimitrios G., I-Jy Steven Chien and Schmuel Yahalom, Methodology for Defining Rational and Defensible Highway Occupancy Charges.

- Greenfeld, Joshua, Matching GPS Observations to Locations on a Digital Map.


Committee Meetings
Dr. Spasovic will attend the UTC meeting and the CUTC dinner. He and George Fallat are scheduled for a breakfast meeting with Penn DOT.

Dr. Jay N. Meegoda is a member of the Committee on Modeling Techniques in Geomechanics – A2K05.

Student of the Year Award
Transportation Ph.D. student, Jakub Rowinski, will be presented an award as NCTIP Outstanding Student of the Year and will received $1,000 from NCTIP. Dr. Spasovic and Sally O’Malley will attend this program.

Hospitality Suite:
NCTIP graduate students will again host a hospitality suite – for the fourth consecutive year, designed to enhance the visibility of the academic and research programs available at NCTIP and the interdisciplinary program in Transportation. The event will provide a casual forum for students and their academic advisors to interact with faculty members and fellow students from other academic institutions around the country. A PowerPoint presentation has been prepared which will be shown continuously throughout the evening. The newest NCTIP publications will be available, as will information on the transportation and civil engineering programs.
NATIONAL PUBLICATIONS SHOWCASE TRANSPORTATION RESEARCH/TOPICS
Contact: Sally O’Malley, Technology Transfer Specialist, 973-596-6463 – omalley@njit.edu


- **In Transition** [http://www.njtpa.org/public_affairs/intrans/intrans.html](http://www.njtpa.org/public_affairs/intrans/intrans.html). Jointly published by NCTIP and the North Jersey Transportation Authority (NJTPA), *InTransition* continues to be a highly respected transportation publication with a circulation of more than 7,000. Delayed because of NJTPA’s involvement in the 9/11 aftermath, *InTransition* was published in December as the Winter 2001 issue. It includes articles on *The Underground War*, focusing on underground (U-Bahn) and surface (S-Bahn) transportation and its place in sheltering the citizenry and supplying the city as the World War II closed around Berlin; *Recollections of the Great Grey Bridge*, building the George Washington Bridge; *Is EDA Money Spent Wisely?* a report on a successful nationwide multi-university study in which NJIT participated; *Making Otto Obsolete*, discussing the Saab variable compression engine; and *Light Rail to Bring Shoppers to Mall on Former Landfill*, highlighting the Jersey Gardens Mall built on brownfields in Elizabeth, New Jersey.

- **OnRoute** [http://www.transportation.njit.edu/NCTIP/TechTransfer/Fall2001.pdf](http://www.transportation.njit.edu/NCTIP/TechTransfer/Fall2001.pdf). The Fall 2001 issue of NCTIP’s semi-annual newsletter featured an in-depth study of Concrete Bridge Deck Cracking Problems [http://www.transportation.njit.edu/NCTIP/research/ResRep.asp?status=Ongoing&projectNo=86&grantNumber=992500](http://www.transportation.njit.edu/NCTIP/research/ResRep.asp?status=Ongoing&projectNo=86&grantNumber=992500). Calls received about this research have been forwarded to Dr. Saadeghvaziri, the primary PI for the project. A Director’s column, NJIT’s congressional Transportation Summit, new transportation faculty member (Jian Yang), 2000 UTC Student of the year (Ken Layne), and new research awards completed the issue. Calls about this research have been forwarded to Dr. Saadeghvaziri, the primary PI for the project.

- **Holiday card** – NCTIP designed and mailed a holiday card to approximately 2,000 transportation professionals nationwide. The card featured another New Jersey artist, William Fisher. His painting, *Train Station* (ca. 1930), contained holiday greetings and the post-9/11 invitation from US Secretary of Transportation Norman Mineta to “please DO travel.”
NCTIP ADVISORY BOARD MEMBER, RESEARCH FACULTY ARE RESOURCES FOR GROUND ZERO RECOVERY OPERATIONS
Contact: Sally O’Malley, Technology Transfer Specialist, 973-596-6463 – omalley@njit.edu

Among the NJIT personnel who provided assistance to authorities following the September 11 attack on the World Trade Center (WTS) were John Schuring, Chair of the Civil and Environmental Engineering Department and Joshua Greenfeld, long time research project manager for NCTIP projects.

Dr. Greenfeld has performed research for current and past NCTIP projects (e.g., Water Level Prediction for Transportation Projects http://www.transportation.njit.edu/NCTIP/research/ResRep.asp?status=Ongoing&projectNo=34&grantNumber=992500 and Digital Map Requirements for Automatic Vehicle Location http://www.transportation.njit.edu/NCTIP/research/ResRep.asp?status=Completed&projectNo=32&grantNumber=991912*). He was also involved in the NCTIP-related Pipeline Safety study of 1996. Greenfeld recently established a GPS (Global Positioning System) Continuously Operating Reference Stations (CORS) project at NJIT, and has been assisting the government for the past two years in monitoring the earth’s crust for earthquakes. GPS is a satellite-based worldwide positioning system that was developed by the Department of Defense for both military and a wide range of civilian applications, including mapping and transportation. Following the WTS attack, Greenfeld was asked to provide help to position planes hovering above the wreckage taking 3-D aerial photos and maps, which recovery crews could then use to assess the damage and orchestrate the cleanup. The antenna at the CORS center tracked the planes and downloaded the data into a computer at NJIT. The National Oceanic and Atmospheric Administration (NOAA) tapped into the computers hourly, and used the data to track planes and record precise images.

Dr. Schuring works closely with NCTIP in many capacities and serves on its advisory board. Shortly after the attack, he volunteered to assist the New York City engineering crews that were assessing the stability of the buildings surrounding the devastated WTC site. Schuring found that most of the buildings left standing had no structural damage. They were pockmarked and windowless but showed no signs of distress or sinking. “The scale of destruction is beyond all I’ve ever seen,” said Schuring, who spent nine hours at the site. An expert in structural design, he has been following the disaster closely. The New York Times interviewed and quoted him throughout the following week.

* This project used GPS technology.
TRANSPORTATION AT NJIT CONTINUES TO GROW
Contact: Dr. Lazar N. Spasovic, Director, NCTIP 973-596-6420 – spasovic@njit.edu


In addition to NCTIP, other transportation entities include:

- The North Jersey Transportation Planning Authority (NJTPA) [http://njtpa.njit.edu/](http://njtpa.njit.edu/).
ISTEA PROJECTS PUBLICIZED LONG AFTER CLOSE OF CONTRACT

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


- Greenfeld, Joshua, *Matching GPS Observations to Locations on a Digital Map*, accepted for presentation and publication to the 81st Annual Meeting of the Transportation Research Board, January 2002, Washington, D.C.
### Section B
#### Research Project Status

Projects selected during the first six months of the current grant year are shown as New. Those continuing from the prior grant year are designated Ongoing. All projects completed by December 31, 2001 are shown under Completed.

<table>
<thead>
<tr>
<th>Project #(s)</th>
<th>Project Title</th>
<th>Principal Investigator(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>New</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NJDOT TO-44</td>
<td>Use of Neural Network/Dynamic Learning Algorithms to Predict Bus Travel Times Under Congestion Conditions</td>
<td>Chien/Chen</td>
</tr>
<tr>
<td>As yet unassigned</td>
<td>Computerized Modeling/Simulation of New Jersey Signalized Highways</td>
<td>Chien/Fallat</td>
</tr>
<tr>
<td>NJDOT TO-36</td>
<td>Fatigue Management, Rail Operations Personnel</td>
<td>Jeng</td>
</tr>
<tr>
<td>992530</td>
<td>Economic and Quality of Life Impacts of Route 21 Freeway Construction</td>
<td>Dresnack/Golub</td>
</tr>
<tr>
<td>992530</td>
<td>Good Neighbor Privacy Fence</td>
<td>Konon/Golub</td>
</tr>
<tr>
<td>992530</td>
<td>Survey of Driver Perceptions of Railroad and Light Rail Warning Devices/Grade Crossings</td>
<td>Jeng/Srinivasan</td>
</tr>
<tr>
<td>992532</td>
<td>Ironbound Research Project</td>
<td>Sollohub</td>
</tr>
<tr>
<td>992534</td>
<td>Alternative Performance Measures for Evaluating Congestion</td>
<td>Spasovic/Hausman</td>
</tr>
<tr>
<td>992535</td>
<td>Assess Impacts and Potential Benefits of Traffic Signal Priority for Buses</td>
<td>Daniel/Lieberman/Srinivasan</td>
</tr>
<tr>
<td>992536</td>
<td>Effectiveness of Bus Nubs for Bus Stops</td>
<td>Daniel/Konon Liu</td>
</tr>
<tr>
<td>992537</td>
<td>Development of a Simulation/Assignment Model for an ITS Priority Corridor – Phase II</td>
<td>Chien/Mouskos/Ziliaskopoulos</td>
</tr>
<tr>
<td>992538</td>
<td>Pedestrian Safety and Mobility Aids for Crossings and Access to Bus Stops</td>
<td>Jeng/Fallat</td>
</tr>
<tr>
<td>Code</td>
<td>Project Title</td>
<td>Status</td>
</tr>
<tr>
<td>--------</td>
<td>-------------------------------------------------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>992533</td>
<td>Estimation of Truck Volumes and Flows – Year I</td>
<td>Ongoing</td>
</tr>
<tr>
<td>995955</td>
<td></td>
<td></td>
</tr>
<tr>
<td>992503</td>
<td>Cause and Control of Transverse Cracking in Concrete Bridge Decks - Year II</td>
<td>Completed</td>
</tr>
<tr>
<td>995923</td>
<td></td>
<td></td>
</tr>
<tr>
<td>992504</td>
<td>Evaluation of Design Ideas for Prevention of Vehicles Entrapment on Railroad Tracks - Year II</td>
<td>Ongoing</td>
</tr>
<tr>
<td>995925</td>
<td></td>
<td></td>
</tr>
<tr>
<td>992505</td>
<td>Data Research - Materials Laboratory Information System (LIMS) - Year II</td>
<td>Ongoing</td>
</tr>
<tr>
<td>995925</td>
<td></td>
<td></td>
</tr>
<tr>
<td>992509</td>
<td>Development of a Simulation/Assignment Model for an ITS Priority Corridor</td>
<td>Ongoing</td>
</tr>
<tr>
<td>995931</td>
<td></td>
<td></td>
</tr>
<tr>
<td>992514</td>
<td>ProMPTS (Project Management &amp; Progress Tracking System) - Maintenance and Improvement Contract</td>
<td>Ongoing</td>
</tr>
<tr>
<td>995936</td>
<td></td>
<td></td>
</tr>
<tr>
<td>992517</td>
<td>E-stations for Newark -- Phase 1</td>
<td>Ongoing</td>
</tr>
<tr>
<td>995938</td>
<td></td>
<td></td>
</tr>
<tr>
<td>992519</td>
<td>Identifying Factors and Mitigation Technologies in Truck Accidents in New Jersey</td>
<td>Ongoing</td>
</tr>
<tr>
<td>995945</td>
<td></td>
<td></td>
</tr>
<tr>
<td>992520</td>
<td>Shoulder Rumble Strips and Bicyclists</td>
<td>Ongoing</td>
</tr>
<tr>
<td>995949</td>
<td></td>
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<tr>
<td>995930</td>
<td>South Jersey Real-Time Motorist Information System</td>
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<td>995930</td>
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<tr>
<td>9999515</td>
<td>Water Level Prediction for Transportation Projects - Year II</td>
<td>Completed</td>
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<td>995914</td>
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<tr>
<td>992501</td>
<td>Congestion Strategies for Adaptive Traffic Signal Systems</td>
<td>Completed</td>
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<td>995900</td>
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<td></td>
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<tr>
<td>992502</td>
<td>The Mature Driver: Safety and Mobility Issues</td>
<td>Completed</td>
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<tr>
<td>995922</td>
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<tr>
<td>992503</td>
<td>Cause and Control of Transverse Cracking in Concrete Bridge Decks - Year I</td>
<td>Completed</td>
</tr>
<tr>
<td>995923</td>
<td></td>
<td></td>
</tr>
<tr>
<td>992504</td>
<td>Evaluation of Design Ideas for Prevention of Vehicles Entrapment on Railroad Tracks - Year I</td>
<td>Completed</td>
</tr>
<tr>
<td>995924</td>
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<tr>
<td>992505</td>
<td>Data Research - Materials Laboratory Information System (LIMS) - Year I</td>
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<tr>
<td>995925</td>
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<td></td>
</tr>
<tr>
<td>Grant No.</td>
<td>Project Title</td>
<td>Principal Investigator(s)</td>
</tr>
<tr>
<td>----------</td>
<td>-----------------------------------------------------------------------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>992511</td>
<td>Highway Advisory Radio (HAR) Systems</td>
<td>Niver</td>
</tr>
<tr>
<td>992513</td>
<td>Logistics Problems in Warehousing and Distribution of Perishable Goods at Tropicana’s Northeast Distribution Center</td>
<td>Bladikas Sengupta</td>
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<tr>
<td>992515</td>
<td>Gender and Professional Worklife at State DOTs: A Pilot Study</td>
<td>Schachter</td>
</tr>
<tr>
<td>992518</td>
<td>Policies for Real-time Vehicle Routing</td>
<td>Yang</td>
</tr>
<tr>
<td>995953</td>
<td>Garden State Parkway Toll Removal</td>
<td>Spasovic</td>
</tr>
<tr>
<td>998305</td>
<td>New Jersey Alliance for Action 2020 Infrastructure Study</td>
<td>Spasovic, Curley, Hausman</td>
</tr>
<tr>
<td>995951</td>
<td>Mobility and the Costs of Congestion in New Jersey – 2001 Update</td>
<td>Spasovic, Hausman</td>
</tr>
</tbody>
</table>

New transportation faculty member, Rachel Liu, has been granted an SBR grant to research The Future of Transportation Models, which will evaluate the function and implementation of the next generation of travel demand models, such as TRANSIMS.

The following research projects are attributable to NCTIP’s existence:

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

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

**Completed within this period:**
- Dynamic Flow Control for Urban Freight Movement / Daniel
- Optimization and Control of Freight Movement and Roadway Transportation Systems
# Section C

## Financial Report

July 1 – December 31, 2001

<table>
<thead>
<tr>
<th>Budget Categories</th>
<th>Budgeted (S)</th>
<th>Programmed (S)</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Center Director Salary</td>
<td>57,750</td>
<td>49,459</td>
<td></td>
</tr>
<tr>
<td>Faculty Salaries</td>
<td>21,000</td>
<td>159,626</td>
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<tr>
<td>Administrative Salaries</td>
<td>50,000</td>
<td>38,186</td>
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</tr>
<tr>
<td>Other Staff Salaries</td>
<td>135,000</td>
<td>98,995</td>
<td></td>
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<tr>
<td>Student Salaries</td>
<td>174,000</td>
<td>1,595,60</td>
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<tr>
<td>Staff Benefits</td>
<td>97,720</td>
<td>68,511</td>
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<tr>
<td><strong>Total Salary and Benefits:</strong></td>
<td><strong>724,470</strong></td>
<td><strong>574,325</strong></td>
<td></td>
</tr>
<tr>
<td>Undergraduate Student Fellowships</td>
<td>10,000</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Permanent Equipment</td>
<td>28,000</td>
<td>12,152</td>
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<tr>
<td>Expendable Equipment and Supplies</td>
<td>70,889</td>
<td>156,302</td>
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</tr>
<tr>
<td>Domestic Travel</td>
<td>18,000</td>
<td>17,155</td>
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</tr>
<tr>
<td>Other Direct Costs: Education</td>
<td>120,000</td>
<td>151,786</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total Direct Costs:</strong></td>
<td><strong>971,359</strong></td>
<td><strong>911,720</strong></td>
<td></td>
</tr>
<tr>
<td>Indirect Costs</td>
<td>370,078</td>
<td>359,139</td>
<td></td>
</tr>
<tr>
<td><strong>Total Costs:</strong></td>
<td><strong>1,341,437</strong></td>
<td><strong>1,270,859</strong></td>
<td></td>
</tr>
<tr>
<td>Federal Share</td>
<td>652,700</td>
<td>511,207</td>
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</tr>
<tr>
<td>Matching Share</td>
<td>688,737</td>
<td>759,652</td>
<td></td>
</tr>
</tbody>
</table>

1. This increase is primarily due to the larger than anticipated number of sub-awards/subcontracts awarded to universities and consultants mainly on NJDOT match accounts.

2. More students supported with tuition awards then planned.
Appendix
NCTIP PUBLICATIONS/PRESENTATIONS
July 1 – December 31, 2001

PEER REVIEWED TRANSPORTATION RESEARCH REPORTS/BOOKS


• Daniel, Janice, Chuck Tsai and Steven Chien, “Factors Influencing Truck Crashes on Roadways with Intersections,” accepted for publication in the *Pre-Print CD ROM of the 81st Annual Meeting of the Transportation Research Board*, Preprint CD-ROM January 2002, Washington, D.C.


• Ding, Yuqing, Steven Chien, and Chien-hung Wei, "Dynamic Bus Arrival Time Prediction Using Adaptive Artificial Networks," accepted for publication by the Journal of Transportation Engineering, ASCE, August 2001.


• Sideris, Alexios, Maria P. Boilé and Lazar N. Spasovic, “Operational Planning of Intermodal Marine Terminals,” to be presented at the 42nd Annual Research and Policy Forum of the Transportation Research Forum and published in the conference proceedings, 29 pages.


TRANSPORTATION RESEARCH PAPERS ACCEPTED FOR PRESENTATION AT ACADEMIC/PROFESSIONAL MEETINGS

• Chien, Steven and Chandra Mouly Kuchipudi, "Dynamic Travel Time Prediction with Real-time and Historical Data," accepted for presentation to the 81st Annual Meeting of the Transportation Research Board, Washington DC, January 2002.
• Chien, Steven, Guangcheng Li, and Janice Daniel, “GIS-Based Truck Accident Information and Management System for New Jersey Roadways accepted for presentation to the 81st Annual Meeting of the Transportation Research Board, Washington DC, January 2002.


• Daniel, Janice, Chuck Tsai and Steven Chien, “Factors Influencing Truck Crashes on Roadways with Intersections,” accepted for presentation to the 81st Annual Meeting of the Transportation Research Board, Washington DC, January 2002.

• Daniel, Janice, Rajat Rajbhandari and Steven Chien, “Evaluation of Truck Crashes on the National Network, accepted for presentation to the 81st Annual Meeting of the Transportation Research Board, Pre-Print CD ROM, January 2002, Washington, D.C.


• Greenfeld, Joshua, “Matching GPS Observations to Locations on a Digital Map,” accepted for presentation and publication to the 81st Annual Meeting of the Transportation Research Board, Pre-Print CD ROM, January 2002, Washington, D.C.


• Juckes, Matthew, “Modeling and Analysis of the Ten Year Plan to Remove Toll Barriers from the North Eastern Toll Road," upcoming presentation to the Transportation Research Board, Visualization in Transportation, symposium and workshop, April 2002.


PROJECT REPORTS AND WORKING PAPERS


Following is an outline of information contained on the NCTIP web site: http://www.transportation.njit.edu/nctip/index.asp. NCTIP continuously updates web data and provides links to more complete information.

Within each division on the left hand size of the web page can be found:

About NCTIP
Directory
Director’s Message
Faculty/PIs
Theme
Mission
Core Values
Education
Research
Technology
Management Structure
Administration
Address
NJIT Organizational linkages

Education
Interdisciplinary Program in Transportation
  - Master of Science in Transportation
  - Doctoral Program in Transportation
  - Graduate Degree Programs Brochure
  - Current Courses
  - Course Descriptions
  - NCTIP Advanced Institute for Transportation Education

MS/Ph.D. Civil and Environmental Engineering
MS/Ph.D. in Industrial and Manufacturing Engineering
MS/MBA Management of Technology
MS Infrastructure Planning

Research
TEA-21 Funded Projects (full project descriptions and final reports where appropriate).
ISTEA Funded Projects (full project descriptions and final reports where appropriate).
Other Funded Projects (full project descriptions and final reports where appropriate).

Technology Transfer
Seminars
Publications
  - OnRoute
  - Research at NCTIP
  - Research Reports
  - InTransition

Presentations
Other Transportation Centers at NJIT
IITC
Brownfields Redevelopment
TIDE
TELUS

Information for PIs
Information for Proposal Submission
  - Research Program Announcement
  - Proposal Cover Sheet
  - Summary Budget Proposal
Information for Principal Investigators
  - NJDOT Guidelines for Preparing and Reviewing Budgets and Invoices
  - NJIT Budget Sheet
  - No-Cost Contract Modification and Extension of Time Requests via Letter
  - NJDOT Final Report Format, Sample Tech Brief

Outstanding Student of the Year

In the center of the page, PIs may enter quarterly report information. The right-hand side of the web page contains sections of current interest:

Special Reports
  - Infrastructure, the Key to New Jersey’s Future
  - Ten Year Plan to Remove the Toll Barriers on the Garden State Parkway
  - Mobility and the Costs of Congestion in NJ – 2001 Update
  - Mobility and the Costs of Congestion in NJ
  - Phase I: Final Report: Brownfields Redevelopment Project

NCTIP Reports
  - Strategic Plan 1999-2001
  - ISTEA Closeout Report
  - Year I:
    Annual Report – Year Ending June 30, 2000
  - Year II
    Semi Annual Report, July – December 2000

Special Events
  - NJDOT 3rd Annual Research Day (Photographs)
  - 81st Annual TRB Meeting (Photographs)
  - Announcement: Student Paper Competition
  - Public Meetings
  - December 2001 Proposal Presentation
NCTIP/IITC Computer Laboratory

In order to quickly and most efficiently deal with transportation research and education, NCTIP has combined with IITC to furnish an advanced computer laboratory, located in the New Jersey Institute of Technology. The lab is equipped with over 20 computers and contains the latest and most sophisticated transportation planning, traffic analysis, computer programming and GIS database management software. The following is a brief breakdown of the Hardware and software currently installed in the lab:

1. Hardware

In order to deal with large scale transportation networks and detail analysis, the NCTIP/IITC computers are constantly being updated and already contain the following:

- Sun Sparc workstations
- Intel Pentium 4 Windows 2000 (NT) computers
- Pentium 586 servers
- Pentium Pro and Pentium 3 Windows NT Workstation 4.0 computers
- 11x17 color printer

2. Software

An expanded battery of software packages are used by the Center and are grouped by the following categories:

- Traffic Analysis
  - CORSIM - simulation
  - Transit 7F - corridor analysis
  - PASSER - corridor analysis and simulation
  - Highway Capacity Software 3.0 - ITE capacity analysis
  - Paramics - 3D simulation
- Transportation Planning
  - GAMS - mathematical programming
  - TRANSCAD - GIS-based transportation network modeling
  - MINUTP - transportation network modeling and traffic assignment
  - Tranplan - transportation network modeling and traffic assignment
  - QRS2 - transportation network modeling and traffic assignment
- GIS
  - MapInfo
  - ARC Info
  - ARC View
    - Map Objects
  - GeoMedia
- Databases and Information
  - TIGER files
  - Census Transportation Planning Package (CTPP)
  - National Transportation Atlas Database
  - NJDEP Color Infrared Digital Imagery
- NJ Brownfields Database
- NJDOT Statewide Truck Model
- NJTPA North Jersey Regional Transportation Model
- NJDOT GIS Base Mapping
- Student/Faculty-Developed Transportation Applications
  - TELUS - transportation economic land use software
- General Applications
  - Oracle
  - Visual Studio
  - Microsoft Office
  - Adobe Acrobat and Photoshop
  - SQL server
UNIVERSITY STATISTICS

• **NJIT President named Educator of the Year**
  The Research & Development Council of New Jersey, a non-profit organization that supports the advancement of research and development throughout New Jersey, has named Saul Fenster, president of NJIT, educator of the year. The award recognizes Fenster’s impact on education as well as his work in training scientists and researchers of the future.

• **Record Year For NJIT Research**
  NJIT closed fiscal year 2001 with a record level of research and development funding. Externally sponsored research totaled $42 million and institutional funding brought expenditures to $51 million. External support increased by more than 13 percent, one of the best growth rates in the last decade, and continuing the long-term trend that places NJIT first in the nation in research and development growth, according to a study just released by the Center at the University of Florida.

  The report, titled “The Top American Research Universities,” shows NJIT’s total funding to exceed that of peer schools such as Rensselaer Polytechnic Institute, Lehigh and Drexel. More dramatic is the growth rate - 487 percent in federal funding between 1990 and 1999 -- which was three times greater than the best of other universities of engineering and science. This was achieved in a period where total federal research grew by only 25 percent, and Massachusetts Institute of Technology’s research funding declined by 1 percent in constant dollars.

  Doctoral enrollment and graduation, faculty publication rate and a number of other factors scale proportionately to total funding, as do many intensive or quality-related metrics, making this is an important component for measuring NJIT’s growth in national prominence.

• **NJIT Graduates Largest January Class Ever**
  Approximately 897 candidates, including 377 bachelor's, 493 master's, and 27 doctoral degree candidates completed requirements for their degrees in December 2001. The 27 doctoral degrees presented were the largest number ever awarded by NJIT at a January commencement.

• **“Most Wired” University Status continues for 5th Year**
  *Yahoo! Internet Life (YIL)* magazine for the fifth consecutive year named New Jersey Institute of Technology (NJIT) among the nation's top ten wired universities and sang its praises with a score of 91.11 percent out of 100 percent for NJIT's attention to "wired" detailing. According to YIL editors, ‘wired schools make computing easy because these institutions invest in infrastructure, student resources, and strong technical support. They need web sites, distance learning and wireless access.’

• **US News and World Report Cites NJIT for Small Classes and Diversity**
  NJIT, the growing public research university and New Jersey's 3rd largest university, recently received recognition in the 2001 Best College Issue, produced by *US News and World Report*. The magazine rankings touted NJIT for small, individualized classes, students who graduate with minimal debt and student diversity. According to U.S. News, when NJIT is compared within its own class of public institutions, the university shines, emerging 7th in
the nation for small classes. NJIT ranks 7th out of more than 225 universities around the nation for diversity. Asian Americans represent the largest minority group. This group represents 24 percent of the university's enrollment. The magazine's most recent poll (covering the 1999-2000 school year) ranks NJIT 16th in the U.S. and first in New Jersey for graduating minority students with engineering degrees. According to the publication, NJIT graduated 183 minority students of which 133 were men and 50 were women. The poll also NJIT ranked 11th in the U.S., and first in New Jersey, for graduating African American students and 19th in the U.S. and first in New Jersey for graduating Hispanic students with baccalaureates in engineering-related technologies.

Black and Hispanic engineering groups have long honored NJIT for its commitment to helping black, Hispanic and other minority group members achieve an education in engineering and technology. Since 1992, Black Issues in Higher Education has backed up this claim by giving NJIT high grades in its rankings for graduating high numbers of minority students.

- **800 Students Participate in Annual Engineering Career Day at NJIT**
More than 600 students and 60 teachers from 42 different private and public high schools throughout New Jersey recently attended the fourth annual engineering career day sponsored by New Jersey Institute of Technology (NJIT).

- **Council for Higher Education in Newark Releases Economic Impact Report**
The four public institutions of higher learning in Newark, which together spend several billions of dollars educating students, continue to fuel the city's renaissance, according to the recent Council For Higher Education In Newark Economic Impact Report 2000, issued by The Council for Higher Education in Newark (CHEN). According to the report, if the four schools that comprise CHEN, including NJIT, were viewed as a business, they would be a $1.1 billion corporation with more than 11,800 employees, $480 million in payrolls and 26,000 students, the report says.