**National UTC Goals:**

**Education:** a multidisciplinary program of course work and experiential learning that reinforces the transportation theme of the Center.

**Human Resources:** an increased number of students, faculty and staff who are attracted to and substantively involved in the undergraduate, graduate, and professional programs of the Center.

**Diversity:** students, faculty, and staff who reflect the growing diversity of the U.S. workforce and are substantively involved in the undergraduate, graduate, and professional programs of the Center.

**Research Selection:** an objective process for selecting and reviewing research that balances multiple objectives of the program.

**Research Performance:** an ongoing program of basic and applied research, the products of which are judged by peers or other experts in the field to advance the body of knowledge in transportation.

**Technology Transfer:** availability of research results to potential users in a form that can be directly implemented, utilized, or otherwise applied.

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**About the URI Transportation Center**

The URI Transportation Center was established in 1999 to conduct multidisciplinary education, research, technology transfer, and outreach for surface transportation systems and advanced transportation infrastructure.

The Center is one of 27 national centers supported by the U.S. Department of Transportation through the University Transportation Centers Program. The national mission of the university transportation centers is to advance U.S. technology and expertise in the many disciplines composing transportation through the mechanisms of education, research and technology transfer at university-based centers of excellence.

“The national UTC vision is nationally recognized centers of excellence, fully integrated within institutions of higher learning, that serve as a vital source of leaders who are prepared to meet the nation’s need for safe, efficient and environmentally sound movement of people and goods.” -UTC Website

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**CENTER THEME**

“Surface Intermodal Transportation Systems and Advanced Transportation Infrastructure with Special Reference to the Marine Environment.”
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In 2003, the URI Transportation Center (URITC) achieved significant results in the three primary areas of Center activity: education, research and outreach/technology transfer.

The URITC continued to expand the University’s capacity to provide transportation education to students at the University and in industry. We offered Federal Highway Administration courses and, in participation with the Federal Highway Administration Division office and Rhode Island Department of Transportation, developed a one-day course on Context Sensitive Solutions, offered in the Fall. The URITC was also successful in funding a transportation planning position in the College of Business Administration and in recruiting a new faculty member for that position.

The Center’s research program sponsored eight new projects. As of December 30, 2003, twenty three previously funded projects are completed with final reports available on the URITC web site. These completed and on-going research efforts resulted in numerous presentations and publications, and requests for URITC researchers to serve as experts on transportation topics.

The URITC research program is also creating opportunities for faculty to apply their specific expertise to transportation problems. Since the initiation of the Transportation Center in 1999, 72 faculty members from 21 Departments in 6 different Colleges of the University have been active in URITC funded research. Each of these faculty member has participated in an average of 1.8 funded research projects.

It is also important to note that student involvement during the past three years has risen to impressive levels. In 2001, 95 students were active in URITC funded research programs, in 2002 the figure was 82, and in 2003 the number of students rose to 102. Thus, our research program provides an excellent platform upon which to create the next generation of transportation professionals.

The Transportation Center outreach and technology transfer efforts were varied. The URITC sponsored the Third Annual National Transportation Week Breakfast, with the RI DOT Director, James Capaldi, P.E., as the keynote speaker. We supported the development of a student initiated community bike program for the URI campus. We concluded the arrangements for the URITC to assume direction of the Local Technical Assistance Program, which primarily will serve public works officials in Rhode Island cities and towns, and continued to offer courses to transportation practitioners.

We also initiated several new efforts to reach out to pre-college aged students. The URITC signed a partnership agreement with RI DOT and a local math and science charter school to develop a transportation curriculum for the school. We participated in the Rhode Island Construction Career Day, during which 1200 students were given a chance to explore opportunities in the construction industries. We also offered a series of summer transportation camps for elementary, middle, and high school students.

The following report provides details of the URI Transportation Center’s work during 2003.
The URITC has a very flat management structure. The URITC Executive Director is responsible for the ongoing operation of the Transportation Center. In this effort, the Executive Director reports directly to the President of the University of Rhode Island.

Policy guidance is provided by an Executive Board, chaired by the URI President and composed of senior members of the Center’s stakeholder groups. The Executive Board has designated an Operating Council to provide recommendations between formal meetings of the board.
The URITC Executive Board is composed of the principal University and public sector stakeholders. The members of the Executive Board were instrumental in the development of the Center and remain actively engaged in supporting the Transportation Center.

The group provides advice to the President of the University of Rhode Island and to the Executive Director in terms of the goals and overall objectives of the Center’s programs.
Research Projects

**RESEARCH FOCUS**

- Intermodal systems planning, management, logistics, and modeling with special reference to the regional context
- Transportation management and traffic control
- Advanced infrastructure materials in transportation
- Environmental protection, safety, and security
EXPERIMENTAL EVALUATION OF NOVEL COMPOSITES FOR USE IN TRANSPORT OF EXPLOSIVE MATERIALS

Project Abstract
Three-dimensional (3D) fabric-reinforced composite materials are fast becoming the component-of-choice in engineering and manufacturing products designed to protect humans (e.g., bicycle helmets), vehicles (e.g., cargo containers), and military systems (e.g., airplane parts and armor). Composites are so-named because they are made of two or more materials (called constituents) that can be distinguished visually. Concrete, for example, is a common composite, which is composed of cement (as a binder) and gravel (as a reinforcement).

Three-dimensional fabric-reinforced composites are distinguished by the fabric's unique three-dimensional weave or braid in the directions of length, width, and thickness. Compared to traditional, homogeneous (one-directional) composites, and to 2D composites (woven only in width and length directions), 3D composite materials appear to be superior in thickness strength, stiffness, and impact and damage resistance. They therefore should offer greater protection of life and property in the event of accidental or intentional explosions.

A shock tube facility will be designed and built with the capability of simulating explosions of various sizes. Initial tests and analyses will first be performed on homogeneous structures, such as the metals or plastics currently used in transportation containers. They will be followed by tests and analyses of 3D composite materials subjected to the same rigorous blasts. Of particular interest are 3D woven S-2 glass-fabric preforms and composites, developed and manufactured by 3TEX, Inc., of Cary, North Carolina-one of the nation's leading composites developers. These products are purported to offer high strength in three directions, and excellent crack suppression, damage tolerance, ballistic-impact resistance, and blast-mitigation properties.

Potential Benefits
If the current study supports the superior strength and integrity of 3D fiber-reinforced composites, the potential benefits include:

• Improved safety of transportation vehicles carrying explosive, flammable materials.
• Improved highway safety for other vehicles and their drivers and passengers.
• Enhanced homeland security due to use of structural materials that are damage-resistant to a variety of terrorist mechanisms.
• Increased production and distribution of lightweight, lower-cost, damage-resistant materials for manufacturing vehicles and parts.
• Energy savings due to lighter weight of such vehicles.

Project Issues
• Reducing auto-accident injuries and fatalities on the nation's highways remains a primary goal, even as new threats to highway safety emerge.
• The legal transportation of explosive materials on highways is an additional concern; highway accidents involving explosives (or unstable chemicals) do occur and pose a threat not only to the primary vehicle's driver, but to nearby motorists.
• Loss of costly and/or essential cargo in the primary vehicle and in adjacent vehicles is another concern.
• The structural integrity of a vehicle's cargo container—that is, its blast resistance—is critical to limiting loss of life, injuries, and cargo damage in the event of an explosion.
• Improved structural materials used to build cargo containers—such as 3D composites—may better protect drivers, vehicles, and cargo from intentional or unintentional explosions.

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ENHANCING DRIVING SAFETY THROUGH PROPER MESSAGE DESIGN ON VARIABLE MESSAGE SIGNS

Project Abstract
Intelligent transportation systems (ITS) are the leading-edge technology used by national and state departments of transportation to enhance highway safety. These information systems employ both hardware (message boards, radio transmissions, signs, signals) and computer software (in-vehicle guidance systems) to alert motorists about highway conditions and travel routes. In the last twenty years, variable message signs (VMS) along highways have become an increasingly important part of ITS. These electronic display boards can communicate real-time traffic and travel information to motorists. They not only help alleviate acute problems caused by roadwork, accidents, road conditions, and traffic bottlenecks, they also enhance driving safety and often shorten commuting time.

As this method of highway communication becomes more frequently used, it is important to create sign messages that can be understood quickly and accurately by motorists—especially in high-volume traffic, construction/repair zones, and severe weather conditions. Due to restricted VMS space, however, even simple ideas can be difficult to communicate to motorists traveling at high speeds. Indeed, the difference between properly or poorly designed sign messages can mean the difference between understanding and confusion.

This project’s focus is collecting and evaluating data about the effectiveness of different VMS display formats and messages for drivers grouped by age, gender, and language ability. Driving speed will also be factored in. Special focus will be placed on the senior population and on ethnic groups for whom English is not the primary language.

Driver and VMS data will be collected in two ways. In the URI Motorist Performance Lab, virtual driving simulations will be used to measure drivers’ responses to varying VMS messages and displays at highway speeds. In the field, on selected roadways, driver-response data to existing VMS will be collected from in-vehicle digital camcorders. Lab and field data will be compared for the different populations groups and VMS.

Potential Benefits
• The success of VMS is finally contingent upon how drivers respond to them, and this project’s aims are uniquely focused on measuring that success by providing new, distinctive, and essential information about a variety of drivers’ responses to different sign formats and messages.

• Such information will provide invaluable information to state departments of transportation, highway managers, and ITS researchers.

• Motorists will ultimately benefit from improved VMS by enjoying greater highway safety, smoother traveling, and less time commuting.

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POOROUS PAVEMENT AND WATER QUALITY: INVESTIGATION OF A NEWLY CONSTRUCTED PARKING LOT AND ITS POTENTIAL IMPACT ON SUBSURFACE WATER

Project Abstract
Organic and inorganic pollutants in rainwater or accidental spills may seep through the porous surfaces of transportation structures like parking lots. They may then travel from the surface to groundwater beneath the structure and pose a potential environmental hazard. Identifying contaminants in subsurface water and measuring the amount and rate of contamination is essential to assessing the environmental impact.

The University of Rhode Island recently built an on-campus parking lot in close proximity to a drinking-water well field. The parking lot serves the university’s new convocation center, which hosts thousands of visitors (and cars) annually. During construction of the lot, investigators installed four nested water-sampling stations throughout the parking area. They are designed to collect infiltrating water after rainfall events.

The nested design of the sampling stations allows water to be collected at both three feet and five feet below the parking lot. The station at the three-foot level is located just beneath or within the lot’s gravel layer. The water collected here travels directly from the lot’s surface without any buffer. The station at the five-foot level is located under two feet of soil, which does act as a buffer. Water samples from both stations will be compared to determine how effective the soil is in preventing and/or removing pollutants from the water.

Each sampling station has two components. A stainless steel catchment box ensures that only water from the parking lot’s surface directly above is captured. It also allows investigators to measure the amount and rate of pollutants travelling from the surface. Adjacent to the box, and connected to it by tubing, is a one-gallon sampling bottle into which water from the catchment box is gravity-fed. The sample bottle is accessed and removed through covered PVC pipe. In the lab, sample water is analyzed to measure both the amount of rainfall passing through the parking lot’s surface during a specific timeframe and the various contaminants within the water. Water samples can be matched to specific weather events by obtaining weather data from the university’s weather station.

Contaminants being analyzed include polycyclic aromatic hydrocarbons (PAHs) such as pyrene; heavy metals (chromium, copper, lead, zinc); sodium, nitrogen, and phosphorous; volatile petroleum hydrocarbons such as toluene; and chloride.

Potential Benefits
- Improved short- and long-term monitoring of water quality on-campus and in the surrounding community
- Better analytic methods for identifying and quantifying specific water pollutants
- Enhanced water-pollution control methods
- Increased collaboration with and support for community, scientific, university, and Department of Transportation (DOT) environmental protection efforts
- Greater public environmental awareness through the establishment of a permanent, interactive, outreach site at the parking lot, which highlights the role played by the community, university, DOT, and the URITC.

New Project

“A spoonful of benzene [one of the materials in gasoline] is enough to contaminate 150,000 gallons of water.”
- Thomas Boving, Ph.D.

Project Issues
- The surfaces of porous transportation structures, such as parking lots, are vulnerable to penetration by pollutants in rainwater or accidental spills.
- These pollutants may invade and contaminate water beneath the structures (subsurface or groundwater).
- Environmentally-sensitive areas such as drinking-water well fields, located near porous structures, may be negatively impacted by pollutants in the water.

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Project Abstract
When the Interstate 90 bridge over Schoharie Creek north of Albany, New York, collapsed in 1987, ten people died. After investigators confirmed that scour had caused the collapse, the Federal Highway Administration (FHWA) mandated all states to assess their bridges for scour effects and identify those already damaged as well as those that were potential problems.

Scouring occurs when moving water removes soils, rocks, and other sediments from riverbeds and riverbanks. The deeper and more swiftly moving the water—e.g., during heavy rains—the greater the scouring effect. A bridge is especially vulnerable to scour damage at its piers (the pillars that support the bridge) and at its abutments (the supports at the beginning and end of the bridge). As the scouring process removes more and more sediment from around bridge supports (creating “scour holes”), the bridge structure becomes unstable and collapse is possible.

Since 1987, the mechanisms involved in bridge scouring have been widely studied and analyzed, and more than 18,000 bridges nationwide have been tagged as critically scour-damaged. Scouring has been studied both in the field (by divers and instrumentation) and in the laboratory (in simulations), and mathematical models that help predict the rate and extent of riverbed scour (i.e., scour depth) have been developed. The predictive value of these models, however, is limited by the scour conditions under which they were originally formulated—and scour depths can vary considerably across a wide range of conditions. More extensive field measurements of scour depths are needed now to amplify the original models.

This project will use advanced sonar technology—e.g., depth sounders, side-scan sonars, and sub-bottom profilers—to conduct on-site field measurements of scour depths at a variety of bridge sites, such as the Sakonnet Bridge, the Jamestown/Newport Bridges, and the Washington Bridge project. Measurements will be conducted aboard the URI Department of Ocean Engineering’s research vessel, R/V CT-1, or a similar vessel.

The scour depths measured during this project will be compared to the predicted scour depths calculated by mathematical models, and any variances will be noted and analyzed. Additionally, as project investigators measure bridge scour at various sites, they will be able simultaneously to identify any current bridge scour damage. Thus, the analytical methods used in this project will also serve as a rapid assessment tool that may complement or even replace inspection by divers.

Potential Benefits
• Development and refinement of a rapid assessment tool for measuring scour
• Identification of scour damage at area bridges
• Prevention of serious bridge damage and/or failure
• Enhanced bridge safety for motorists
• Present and future cost savings and damage containment

New Project

Project Issues
• Riverbed scour is one of the primary causes of bridge damage and bridge collapse in the United States.
• When bridges collapse, lives are lost; essential structures and other valuable property are damaged or destroyed; nearby transportation systems are catastrophically disrupted.
• Better systems for monitoring scour-susceptible bridges and riverbanks are critically needed to alert transportation officials to potential disasters before they happen, and to help engineers choose optimal sites for bridge construction.

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LIQUEFACTION POTENTIAL OF INORGANIC AND ORGANIC SILTS

Project Abstract
The objective of the research is to investigate the dynamic behavior and liquefaction potential of inorganic and organic silts commonly found in Rhode Island. This will involve a detailed sampling and laboratory testing program to determine the environmental conditions (stress state, cycles of loading) and compositional factors (void ratio, plasticity, fines content) necessary for liquefaction and cyclic mobility in these soils.

These soils are prevalent in Rhode Island and in many urban areas, and there is no clear evidence about how these soils will behave during a design earthquake. This research will involve a detailed laboratory testing program involving cyclic triaxial tests and a sampling program involving fixed piston and block samples. A careful sampling program is critical for this type of study because of the extreme difficulty in obtaining undisturbed samples of saturated silts. The results of this research will have a direct impact on the seismic design of surface transportation infrastructure, such as highway bridges and embankments, built on the organic and inorganic silts of Rhode Island.

There is currently no research underway in Rhode Island to study the liquefaction potential of inorganic and organic silts. This is despite the fact that these deposits underlie significant areas of the city of Providence and other urban areas in the United States. An important aspect of the proposed research that differs from most studies of this type is the focus on high quality piston and block sampling to capture the in situ structure of the soil. This can be extremely difficult in silts, and most comparable research projects perform tests on samples reconstituted in the laboratory.

The results of this research will provide valuable information for Providence and the broader geotechnical community about the seismic properties of inorganic and organic silts and their cyclic resistance to earthquake loading. Specifically, this research will attempt to answer the question of whether or not the silts will liquefy or experience significant losses in strength during a design earthquake.

Potential Benefits
- A better understanding of how silts react during a seismic event can lead to safer buildings and transportation infrastructure.

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New Project

Project Issues
- Loosely compacted and water-saturated soils (inorganic and organic silts, sands, and other soils) are found throughout Rhode Island and notably in Providence as they are in other urban areas in the United States.
- When loosely organized soils are impacted by seismic (earthquake) conditions, they may be rearranged to such an extent that they behave as thick, flowing fluids—a process called liquefaction.
- Liquefied soils under buildings and other structures may not be strong enough to support the overlying structures, which may then sink and/or collapse with disastrous results.
- Currently, there is no research underway in Rhode Island to study the liquefaction potential of silts under earthquake conditions; consequently, their behavior during earthquakes is not known.
- Rhode Island and neighboring New England states are potential earthquake sites.

Potential Benefits
- A better understanding of how silts react during a seismic event can lead to safer buildings and transportation infrastructure.

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A WEB-BASED RELATIONAL DATABASE PORTAL FOR SUBSURFACE GEOTECHNICAL DATA

Project Abstract
Earlier research by the project team established a template and flat-file database that can be used to catalog diverse types of geotechnical, geologic, cartographic, environmental and cultural data in a GIS format.

However, at present, only the flat database is available to users through the web-based portal created during a previously funded project. Internet users are therefore limited to simple queries for subsurface information (such as depth to bedrock), and cannot fully evaluate systematic changes that occur downhole for a given site or for clusters of sites. In addition, users cannot easily construct the kinds of two- and three-dimensional diagrams (cross sections, block diagrams, etc.) that would be of most use.

The project team will remedy these limitations with a four-pronged approach, including:

• developing a web-based portal that allows tabular and map viewing of database queries
• adding user capability to submit more complex queries
• providing interactive, “on the fly” cross-section capability
• updating data in the database by coordinating the addition of new drilling data through electronic submission of complete borehole records.

The result will be a powerful statewide borehole database that provides a useful and cost-effective mechanism for maintaining the subsurface data associated with transportation networks. Such a database will allow easy access to prior geotechnical work (including drilling, boring, and other data gathering), which will result in significant savings through the elimination of unnecessary and repetitive exploratory drilling.

Potential Benefits
• Borehole data derived from highly costly drilling projects can be preserved in a user-friendly data library for future applications.
• The borehole database (GEOInfoDB) can be linked to other Web-based databases (e.g., for water resources and mineral resources) so that seemingly disparate data can be collected and analyzed for significant GIS-based links.
• Ongoing workshops conducted by the project team will promote awareness of the borehole library and facilitate its application.
• The completion of the project will place Rhode Island in the forefront of GIS-oriented analysis of subsurface data in the context of transportation planning, and will thus serve as a model for other transportation agencies throughout the country.

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DESIGNING MODEL ASPHALT SYSTEMS USING MOLECULAR SIMULATION

Project Abstract
The Congress-initiated Strategic Highway Research Program (SHRP) spent almost seven years and $50 million developing innovative ways to specify, test, and design new asphalt mixtures. One of the major results of this research was the Superpave (“superior performing asphalt pavements”) system, an improved method for evaluating and designing asphalt concrete components, binders, mixtures, and performance. The research initiative also produced “core” asphalt mix models with predicted superiority in withstanding rutting, fatigue, thermal cracking, and moisture damage relative to specific weather and traffic conditions.

Asphalts are complicated, poorly defined, and inexpensive mixtures of hundreds of chemical compounds. Even with well-documented samples, such as the SHRP-sponsored “core,” determining effective strategies for creating targeted asphalt properties is a difficult process.

This project pursues the idea of creating model asphalt mixtures composed of only five to ten compounds that replicate several physical properties of SHRP core asphalts while possessing chemical functionalities consistent with those of real asphalts. Such mixtures would not replace asphalts in engineering applications. Instead, they would provide input for studies investigating why different asphalts exhibit different physical properties, and how those properties could be fine tuned to more desirable values.

The direct outcome of this project will be sets of mixture compositions that are predicted to exhibit physical properties comparable to those of the SHRP “core” asphalts. This molecular-level detail will enable investigators to assess why particular asphalt additive strategies succeed or fail. For example: Why do certain additives affect high or low temperature properties? What kinds of polymers, copolymers, or plasticizers might be most compatible? The long-term application is thus creating modified asphalts that exhibit superior physical property characteristics for highway use.

Potential Benefits
• A more complete understanding of molecular asphalt fundamentals will yield better modification strategies for future asphalt mixes.
• Improved asphalt mixes equal improved roads, reduced highway maintenance costs, greater traffic safety, more efficient fuel consumption, and less stressful commutes.

Project Issues
• Asphalt concrete mixtures cover the majority of U.S. roads and are subject to varying degrees of deterioration depending on mixes used, weather, and traffic volume and loads.
• The direct financial costs of repairs to deteriorating roads are over $10 billion annually.
• Indirect costs caused by damaged roadways include those resulting from traffic accidents and automobile damage; additionally, road construction and highway rerouting cause traffic congestion, longer commutes, poor fuel consumption, and driver stress.
• Better asphalt mixes, which yield superior roadway surfaces over a longer term, are needed.

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NARRAGANSETT BAY HIGH SPEED FERRY NETWORK PHASE 1 – SITE SELECTIONS AND SITE DESIGNS

Project Abstract
In consultation with the Rhode Island Department of Transportation (RIDOT), the Rhode Island Public Transit Authority (RIPTA), and the Rhode Island Department of Economic Development (RIEDC), team members of this demonstration project will collaborate with several cities and towns lining the shores of Narragansett Bay to gather “building block” information on preferred potential sites for ferry terminal buildings and docks. Approximately forty candidate sites will be identified.

From the among the forty potential sites, site-specific plans and landscape layouts will be created for six to twelve ferry sites. To provide a unique learning experience for Rhode Island students, a select group of high school and college students from across the state will be chosen to create preliminary designs. High school students will assemble existing and historical information about the proposed sites into project case studies. Each case study will be supplemented by college students’ design prototype site plans, which will include architectural building layouts, design (architectural and landscape) renderings, etc.

The Internet will be the primary delivery mechanism for displaying student generated designs, renderings, and animations. Site-specific project Web sites will be established to allow the general public access to information the students find relevant to the site and subject matter. Existing studies and reports, historical maps, and photographs will be made available on the project Web site to compliment the student-generated information.

Potential Benefits
• This project will lay much needed and extensive groundwork for the ultimate building of a successful waterborne passenger transportation network in Rhode Island.
• Students, community members, architects, designers, engineers, and local and state agencies will be united in a common goal: solving a major transportation problem in a creative and cost-effective manner.

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Project Issues
• Traffic volume on Rhode Island’s highways and major secondary roads has reached critical mass.
• Year-round commuters as well as summer tourists and beach travelers face major congestion throughout the state.
• Increasingly high-volume traffic and congestion place considerable strain on Rhode Island’s roadways, accelerating the rate of normal wear-and-tear.
• Viable alternatives to private and public automobile transportation are needed.
• Waterborne passenger transportation may provide a significant, cost-saving alternative to highway travel.
Enhancing Driving Safety through Proper Message Design on Variable Message Signs  
Dr. Jyh-Hone Wang, Associate Professor  
University of Rhode Island Department of Industrial and Manufacturing Engineering  
Year Initiated: 2003 - 000052

Experimental Evaluation of Novel Composites for Use in Transport of Explosive Materials  
Dr. Carl-Ernst Rousseau, Assistant Professor  
University of Rhode Island Department of Mechanical Engineering  
Year Initiated: 2003 - 000057

Calibration of Scour Models Using Advanced Sonar Technology for Bridge Safety  
Dr. James Miller, Professor, University of Rhode Island Department of Ocean Engineering  
Year Initiated: 2003 - 000059

Liquefaction Potential of Inorganic and Organic Silts  
Dr. Christopher Baxter, Assistant Professor  
University of Rhode Island Department of Ocean & Civil Engineering  
Year Initiated: 2003 - 000060

Web Based Relational Database Portal for Subsurface Geotechnical Data  
Dr. Daniel Murray  
University of Rhode Island Department of Geosciences  
Year Initiated: 2003 - 000158

Porous Pavement and Water Quality: Investigation of a Newly Constructed Parking Lot and its potential Impact on Subsurface Water  
Dr. Thomas Boving  
University of Rhode Island Department of Geosciences  
Year Initiated: 2003 - 000163

Narragansett Bay High Speed Ferry Network Phase 1 – Site Selections and Site Designs  
Dr. Angelo Simeoni  
University of Rhode Island Department of Community Planning & Landscape Architecture  
Year Initiated: 2003 - 000188

Designing Model Asphalt Systems Using Molecular Simulation  
Dr. Michael Greenfield  
University of Rhode Island Department of Geosciences  
Year Initiated: 2003 - 000216

The URITC research program is conducted through an open, competitive process. Each year research objectives are established and announced to prospective researchers by way of a call for problem statements.

Anyone, whether within the university or not, may submit a problem statement. These problem statements are reviewed by the URITC Executive Board, and those deemed most in keeping with the overall goals of the Transportation Center and consistent with the year's research objectives are asked to submit a full proposal. The full proposals, in turn, go through a peer review process and a subsequent panel review.
Ongoing Projects Listing

**Stretching Ability of Chip Seal Membranes**  
Dr. Milton Huston, Adjunct Associate Professor  
University of Rhode Island Department of Civil Engineering  
Year Initiated: 2002 - 536175

**Harnessing the Power of Relational Databases for Management of Geotechnical and Geologic Data**  
Dr. Daniel Murray, Professor  
University of Rhode Island Department of Geosciences  
Year Initiated: 2002 - 536176

**Determining the Effectiveness of New Technology Data Collection Devices for Real-Time Transportation System Management**  
Dr. Chris Hunter, Assistant Professor  
University of Rhode Island Department of Civil and Environmental Engineering  
Year Initiated: 2002 - 536177

**Developing and Applying a Transportation Model for Aquidneck Island**  
Dr. Farhad Atash, Professor  
University of Rhode Island Department of Community Planning & Landscape Architecture  
Year Initiated: 2002 - 536178

**Integrated Transportation Pricing Strategy for Newport**  
Dr. Timothy Tyrrell, Professor  
University of Rhode Island Department of Environmental and Natural Resource Economics  
Year Initiated: 2002 - 536179

**Development of a Course on Bridge Management**  
Dr. George Tsiatas, Professor  
University of Rhode Island Department of Civil Engineering  
Year Initiated: 2002 - 536180

**Wood Filters as an Innovative Treatment Method for Roadway Runoff Pollutants**  
Dr. Thomas Boving, Assistant Professor  
University of Rhode Island Department of Geosciences  
Year Initiated: 2002 - 536181
Ongoing Projects Listing

RI DOT 2001 Bicycle Transportation User Survey Developing Intermodal Connections for the 21st Century
Dr. R. Choudary Hanumara, Professor
University of Rhode Island Department of Computer Science and Statistics
Year Initiated: 2002 - 536182

Development of Thermochromic Paints, Plastics, and Rubbers for Rapid Visual Assessment of Temperature
Dr. Brett Lucht, Associate Professor
University of Rhode Island Department of Chemistry
Year Initiated: 2002 - 536183

Dredging in a Changing Scientific and Regulatory Environment - Year 2
Dr. Richard Burroughs, Professor
University of Rhode Island Department of Marine Affairs
Year Initiated: 2002 - 536184

Mechanical Behavior of Recycled Asphalt Material Under Dynamic Loading Conditions
Dr. Martin Sadd, Professor
University of Rhode Island Department of Mechanical Engineering
Year Initiated: 2002 - 536186

Application of a Multimodal Demand Simulation Model to Assess Container Transportation Policy Issues in the Northeast
Dr. Thomas Grigalunas, Professor
University of Rhode Island Department of Environmental and Natural Resource Economics
Year Initiated: 2002 - 536xxx

Replacement of Chromate in Paints and Corrosion Protection Systems
Dr. Mercedes Rivero-Hudec, Associate Professor
University of Rhode Island Department of Chemical Engineering
Year Initiated: 2002 - 536xxx
Ongoing Projects Listing

Dredging in a Changing Scientific and Regulatory Environment
Dr. Richard Burroughs, Professor
University of Rhode Island Department of Marine Affairs
Year Initiated: 2001 - 536151

Development of Thermochromic Paints, Plastics, and Rubbers for Rapid Visual Assessment of Temperature
Dr. Brett Lucht, Associate Professor
University of Rhode Island Department of Chemistry
Year Initiated: 2001 - 536152

Field Study of Composite Piles in the Marine Environment
Dr. Christopher Baxter, Assistant Professor
University of Rhode Island Departments of Ocean and Civil and Environmental Engineering
Year Initiated: 2001 - 536153

Development of a Customer Satisfaction and Service Quality Measurement Method and Tool for the Rhode Island Public Transit Authority
Dr. Albert Della Bitta, Professor
University of Rhode Island College of Business Administration
Year Initiated: 2001 - 536154

Contamination of Urban Lakes by Storm Runoff from Highway and Railway Drainage Systems
Dr. John King, Professor
University of Rhode Island School of Oceanography
Year Initiated: 2001 - 536155

Development of an Advanced Pavement Deicing System
Dr. David Taggart, Professor
University of Rhode Island Department of Mechanical Engineering
Year Initiated: 2001 - 536156

Investigation of Potential for Intermodalizing Paratransit in Rhode Island
Dr. Christopher Hunter, Assistant Professor
University of Rhode Island Department of Civil Engineering
Year Initiated: 2001 - 536157
Ongoing Projects Listing

Replacement of Chromates in Paints and Corrosion Protection Systems
Dr. Mercedes Rivero-Hudec, Associate Professor
University of Rhode Island Department of Chemical Engineering
Year Initiated: 2001 - 536158

Intelligent Traffic Anomaly Diagnosis Through the Integration of Diverse Information Sources
Dr. Joan Peckham, Professor
University of Rhode Island Department of Computer Science and Statistics
Year Initiated: 2001 - 536159

Processing of Cenosphere-Cement/Asphalt Composite Materials and Evaluation of their Mechanical and Acoustic Properties
Dr. Arijit Bose, Professor
University of Rhode Island Department of Chemical Engineering
Year Initiated: 2001 - 536160

Multimodal Vehicle Display Design and Analysis
Dr. Manbir Sodhi, Professor
University of Rhode Island Department of Industrial and Manufacturing Engineering
Year Initiated: 2001 - 536161

Creating Safe Transportation Options for College Students
Dr. Norbert Mundorf, Professor
University of Rhode Island Department of Communication Studies
Year Initiated: 2001 - 536162

Comprehensive Framework for Sustainable Container Ports Development of U.S. East Coast in the 21st Century (Year 3)
Dr. Thomas Grigalunas, Professor
University of Rhode Island Department of Environmental & Natural Resource Economics
Year Initiated: 2001 - 536163

Effect of Microstructure on the Static and Dynamic Behavior of Recycled Asphalt Material
Dr. Martin Sadd, Professor
University of Rhode Island Department of Mechanical Engineering
Year Initiated: 2001 - 536164
Exploring Ways of Influencing Transport Behaviors by Using Telecommunications Technologies
Dr. Nikhilesh Dholakia, Professor
University of Rhode Island College of Business Administration
Year Initiated: 2000 - 536131

Intermodal Transport of Petroleum Products-Smart Terminals
Dr. Winston Knight, Professor
University of Rhode Island Department of Industrial and Manufacturing Engineering
Year Initiated: 2000 - 536133

Replacement of Chromates in Paints and Corrosion Protection Systems
Dr. Mercedes Rivero-Hudec, Associate Professor
University of Rhode Island Department of Chemical Engineering
Year Initiated: 2000 - 536135

Fiber Reinforcement of Concrete
Dr. Richard Brown, Professor
University of Rhode Island Department of Chemical Engineering
Year Initiated: 2000 - 536136

Implementation of a Highway Monitoring Program Utilizing Intelligent Transportation Systems (ITS)
Dr. Milton Huston, Adjunct Associate Professor
University of Rhode Island Department of Civil Engineering
Year Initiated: 2000 - 536141

Moving Smart in Rhode Island
Dr. Joan Peckham, Professor
University of Rhode Island Department of Computer Science and Statistics
Year Initiated: 2000 - 536142

Magnet and Induced Impacts of Quonset Container Port
Dr. Edward Mazze, Dean
University of Rhode Island College of Business Administration
Year Initiated: 2000 - 536145
Ongoing Projects Listing

**Multi Modal Vehicle Display Design and Analysis**
Dr. Manbir Sodhi, Professor
University of Rhode Island Department of Industrial and Manufacturing Engineering
Year Initiated: 1999 - 536103

Dr. David Shao, Professor
University of Rhode Island Department of Industrial and Manufacturing Engineering
Year Initiated: 1999 - 536113
Completed Projects Listing

**Chemical Retention Capacity of a Newly Constructed Roadway Runoff Detention Pond**
Dr. Thomas Boving, Assistant Professor  
University of Rhode Island Department of Geosciences  
Year Initiated: 2000 - 536132

**High Accuracy GPS Base Station and Web Delivery System**
Dr. Peter August, Professor  
University of Rhode Island Department of Natural Resources Science  
Year Initiated: 2000 - 536134

**A Web-Based Core Library for Rhode Island**
Dr. Daniel Murray, Professor  
University of Rhode Island Department of Geosciences  
Year Initiated: 2000 - 536137

**Effect of Microstructure on the Static and Dynamic Behavior of Recycled Asphalt Materials**
Dr. Martin Sadd, Professor  
University of Rhode Island Department of Mechanical Engineering  
Year Initiated: 2000 - 536138

**TRANSMAP: An Integrated, Real-Time Environmental Monitoring and Forecasting System for Highways and Waterways in RI**
Dr. Malcolm Spaulding, Professor  
University of Rhode Island Department of Ocean Engineering  
Year Initiated: 2000 - 536139

**Comprehensive Framework for Sustainable Container Ports Development of US East Coast in the 21st Century**
Dr. Thomas Grigalunas, Professor  
University of Rhode Island Department of Environmental and Natural Resource Economics  
Year Initiated: 2000 - 536140

**Inorganic and Organic Characterization of Dredged Sediments from the Proposed Quonset Point Channel in Narragansett Bay**
Dr. Raymond Wright, Professor  
University of Rhode Island Department of Civil Engineering  
Year Initiated: 2000 - 536143
Completed Projects Listing

**Performance Improvement & Measurement of Open-Graded Asphalt Mixes**  
Dr. Mohammad Faghri, Professor  
University of Rhode Island Department of Mechanical Engineering  
Year Initiated: 2000 - 536144

**Red Light Running in Rhode Island**  
Dr. Chris Hunter, Assistant Professor  
University of Rhode Island Department of Civil and Environmental Engineering  
Year Initiated: 2000 - 536146

**TRANSMAP: An Integrated, Real-Time Environmental Monitoring and Forecasting System for Highways and Waterways in RI**  
Dr. Malcolm Spaulding, Professor  
University of Rhode Island Department of Ocean Engineering  
Year Initiated: 1999 - 536100

**Fiber Reinforcement of Concrete**  
Dr. Richard Brown, Professor  
University of Rhode Island Department of Chemical Engineering  
Year Initiated: 1999 - 536101

**Geologic Transportation Maps for the 21st Century**  
Dr. O.Don Hermes, Professor  
University of Rhode Island Department of Geosciences  
Year Initiated: 1999 - 536102

**Beneficial Uses of Dredge Material from the QPD Intermodal Port Terminal**  
Dr. Armand Silva, Professor  
University of Rhode Island Department of Ocean Engineering  
Year Initiated: 1999 - 536104

**The Design and Development of Information and Computer Systems for the URITC**  
Dr. Joan Peckham, Professor  
University of Rhode Island Department of Computer Science and Statistics  
Year Initiated: 1999 - 536105
Completed Projects Listing

**Comprehensive Framework for Sustainable Container Ports Development of US East Coast in the 21st Century**
Dr. Thomas Grigalunas, Professor
University of Rhode Island Department of Environmental and Natural Resource Economics
Year Initiated: 1999 - 536106

**Development of an Advanced Bridge, Highway, and Runway Deicing System**
Dr. David Taggart, Professor
University of Rhode Island Department of Mechanical Engineering
Year Initiated: 1999 - 536107

**Effect of Microstructure on the Static and Dynamic Behavior of Recycled Asphalt Material**
Dr. Martin Sadd, Professor
University of Rhode Island Department of Mechanical Engineering
Year Initiated: 1999 - 536108

**Modeling for Real-Time Traffic Control in the Rhode Island Intelligent Road**
Dr. William Palm, Professor
University of Rhode Island Department of Mechanical Engineering
Year Initiated: 1999 - 536109

**Using Cenospheres to Develop New Asphalt and Cement-Based Concrete Materials**
Dr. Arun Shukla, Professor
University of Rhode Island Department of Mechanical Engineering
Year Initiated: 1999 - 536110

**Interactions of Transportation and Telecommunications Behaviors in Relation to RIIR: Modeling the User Perspective**
Dr. Nikhilesh Dholakia, Professor
University of Rhode Island College of Business Administration
Year Initiated: 1999 - 536111

**Data Analysis and Detection Methods for Online Health Monitoring of Bridge Structures**
Dr. Sau-Lon Hu
University of Rhode Island Department of Ocean Engineering
Year Initiated: 1999 - 536112

**Smart Speed Bumps**
Dr. William Ohley
University of Rhode Island Department of Electrical Engineering
Year Initiated 1999 - 536114
Publications, Presentations & Success Stories
### Publications, Presentations & Success

**FY 2003 URITC 000052 Dr. Jyh-Hone Wang**  
Enhancing Driving Safety through Proper Message Design on Variable Message Signs  
Reported Papers, Publications, Success Stories from January 1, 2003 to December 31, 2003

- **10/2003**  
  Presentation entitled “Enhancing Motorist Understanding of Variable Message Sign Messages”, RIDOT ITS Seminar

**FY 2002 URITC 536152 Dr. Brett Lucht**  
Development of Thermochromic Paints, Plastics, and Rubbers for Rapid Visual Assessment of Temperature  
Reported Papers, Publications, Success Stories from January 1, 2003 to December 31, 2003

- **09/2003**  
  Presentation entitled “Synthetic Methods for the Modification of the Thermochromic Properties of Polythiophenes” at National American Chemical Society Meeting.

- **06/2003**  
  Article published in Cosmetics & Toiletries describing some of the potential applications of the thermochromic pigments under investigation.

- **05/2003**  
  Presentation entitled “Thermochromic Pigments Based on Polythiophenes.” Invited paper presented by B. Lucht at the High Performance & Functional Pigments Conference, Atlanta, GA.

- **05/2003**  

- **02/2003**  

**FY 2002 URITC 536180 Dr. George Tsiatas**  
Development of Course on Bridge Management  
Reported Papers, Publications, Success Stories from January 1, 2003 to December 31, 2003

- **09/2003**  
  Success Story: The course CVE562—“Management of Highway Bridges”—was approved by all levels at the University of Rhode Island and was taught during the Fall 2003 semester.
Publications, Presentations & Success

FY 2002 URITC 536181 Dr. Thomas Boving
Wood Filters as an Innovative Treatment Method for Roadway Runoff Pollutants
Reported Papers, Publications, Success Stories from January 1, 2003 to December 31, 2003

12/2003  Presentation entitled “Efficacy of Wood Fibers for Removal of Pollutants from Roadways”

12/2003  Success Story: After submitting a pre-proposal to the Cooperative Institute for Coastal and Estuarine Environmental Technology (CICEET), a full proposal was invited. The proposed work focuses on the design of a modular wood fiber filtration system that can be implemented as an extension of or alternative to existing, conventional BMPs. The proposal builds heavily on URITC field and lab data.


FY 2002 URITC 536182 Dr. R. Choudary Hanumara
RIDOT 2001 Bicycle Transportation User Survey: Developing Intermodal Connections for the 21st Century
Reported Papers, Publications, Success Stories from January 1, 2003 to December 31, 2003

06/2003  Presentation describing overview of the project given at the 2003 Rails-to-Trails Trail Link Conference in Providence, RI.

FY 2001 URITC 536146 Dr. Christopher Hunter
Red Light Running in Rhode Island
Reported Papers, Publications, Success Stories from January 1, 2003 to December 31, 2003

Publications, Presentations & Success

FY 2001 URITC 536156 Dr. David Taggart
Development of an Advanced Pavement De-Icing System
Reported Papers, Publications, Success Stories from January 1, 2003 to December 31, 2003

01/2003       Publication entitled “Application of Jetting Technology to Pavement De-Icing,” by D. Taggart, M. Huston, and O. Ibrahim, accepted for publication in the Transportation Research Record.

FY 2001 URITC 536159 Dr. Joan Peckham, Dr. Christopher Hunter
Intelligent Traffic Anomaly Diagnosis Through the Integration of Diverse Information Sources
Reported Papers, Publications, Success Stories from January 1, 2003 to December 31, 2003


FY 2001 URITC 536160 Dr. Arijit Bose
Processing of Cenosphere-Cement/Asphalt Composite Materials and Evaluation of their Acoustic Properties
Reported Papers, Publications, Success Stories from January 1, 2003 to December 31, 2003


05/2003       Success Story: Best Paper Award by student, awarded by the Society of Experimental Mechanics.
Publications, Presentations & Success

FY 2000 URITC 536131 Dr. Nikhilesh Dholakia, Dr. Norbert Mundorf
Exploring Ways of Influencing Transport Behaviors by Using Telecommunications Technologies
Reported Papers, Publications, Success Stories from January 1, 2003 to December 31, 2003


03/2003  Success Story: Book chapter on “E-Shopping” to be published in book on Virtual Mobility

01/2003  Success Story: Book chapter on “Distance Learning” to be published in book on Virtual Mobility.


01/2003  Success Story: Full-page article on telework research by the team in Providence Business News.

Publications, Presentations & Success Stories

FY 2000 URITC 536140 Dr. Thomas Grigalunas
Comprehensive Framework for Sustainable Container Ports Development of U.S. East Coast in the 21st Century Years I and II
Reported Papers, Publications, Success Stories from January 1, 2003 to December 31, 2003


01/2003 Presentation entitled “A Multimodal Transportation Simulation Model for U.S. Coastal Container Ports,” by M. Luo and T. Grigalunas at the Annual Meeting of the Transportation Research Board, Washington, D.C. Also published as article in Transportation Research Record.


01/2003 Success Story: Dr. Thomas Grigalunas appointed as member and participated in the initial meeting of the new Transportation and the Environment Task Force of the Transportation Research Board, Washington, D.C.

01/2003 Success Story: T. Grigalunas and J. Opaluch were asked by the State of Delaware to undertake a second independent review and critique of all revised economic studies of the costs and benefits to Delaware of proposed deepening project for Delaware Bay and River.
Publications, Presentations & Success Stories

FY 2000 URITC 536141 Mr. Milton Huston
Implementation of a Highway Monitoring Program Utilizing Intelligent Transportation Systems (ITS)
Reported Papers, Publications, Success Stories from January 1, 2003 to December 31, 2003

07/2003
Success Story: Intelligent Transportation Systems (ITS) equipment recommended by researchers to the Rhode Island Department of Transportation (RIDOT) was installed on Route 146.

FY 2000 URITC 536146 Dr. Christopher Hunter
Red Light Running in Rhode Island
Reported Papers, Publications, Success Stories from January 1, 2003 to December 31, 2003

03/2003
Technology Transfer
As of July 1, 2003, the RIT2 Center became a unit of the URI Transportation Center. The move to the URITC provides local municipalities with direct access to the resources of the Transportation Center and to the University. The RIT2 Center also provides our students with opportunities to engage in applied activities that have an immediate impact on Rhode Island’s local communities. A review of the RIT2 Center’s achievements follow.

Rhode Island has participated in the Local Technical Assistance Program (LTAP) since January 1991. Under this program, the Rhode Island Technology Transfer Center (RIT2) was established to serve as a distribution point for technical information that can help local transportation officials. The methods of technology transfer include workshops, newsletters, videos, site visits, and other forms of assistance.

The Center’s primary customers are the highway, public works, planning and engineering staffs of the state’s 39 municipalities, the Rhode Island Department of Transportation and other state agencies. An advisory group guides the Center’s activities, reviews the Center’s plan of work and provides a year-end evaluation. The committee includes local public works officials from rural and urban municipalities, a member from the FHWA Rhode Island Division Office, a member from the Rhode Island Department of Transportation and the Director of the RIT2 Center.
The Rhode Report

In collaboration with the RIT2 Center, the URI Transportation Center published its first issue of the Rhode Report, a new full-color newsletter for public works employees in Rhode Island. The new publication, with articles ranging from workplace safety to lighter-topic stories such as “New Toys in the Barn”, “My Other Car is a...” and a “Where’s That” column where readers must identify less-than-well-known Rhode Island landmarks make for a newsletter that workers will talk about at lunch.

The newsletter also provides a calendar of events, training and scholarship opportunities, and articles on safety and best practices in the trade.

The newsletter is both informative and entertaining. “We wanted to produce something that they would actually read,” says John Peterson, Senior Information Technologist at the Transportation Center and editor of the newsletter. “We found that the mix of stories we put together, ranging from fun to very serious make the newsletter popular.”

The newsletter is published quarterly by the Center. A print edition has a total circulation of about 650, and is also available online on the RIT2 website at www.uritc.uri.edu/t2center.
A New Website for the RIT2 Center

Rhode Island T2 Center has launched a new website (http://www.uritc.uri.edu/t2center) being hosted in University of Rhode Island Transportation Center. The website will be a useful and convenient resource for the state and local transportation personnel and public works agencies.

A significant feature of the site is an online calendar of events and trainings sessions offered by the Center at different locations. On this online calendar, the public is able to access description, contact information, location and specific dates of upcoming events and training opportunities. Center staff is able to update and maintain this online calendar directly from an internal intranet site.

Also on the site is a brief history of the center, including its Local Technical Assistance Program and other services. This program is the primary way that the Federal Highway Administration (FHWA) helps local transportation agencies learn about maintaining and improving their roads, innovative methods and materials, and ways to work smarter. Other services include technical support, publications, and an electronic library. The RIT2’s quarterly, The Rhode Report can also be downloaded.

This website makes T2 Center information accessible to the public. Individuals can signup online and receive information for the center's news items, upcoming events and training sessions, and a newsletter. The site is also designed to assist public access to periodicals and publications related to public works and transportation found in the Center’s paper and electronic libraries.

The website was designed by Lin Lee, graduate student of computer science at URI and an intern at the URITC with John Peterson, Senior Information Technologist.

Visit the RIT2 website at www.uritc.uri.edu/t2center.
Long used in offices to simplify the workflow, computers are being used nationally by public works’ workers in the field for tasks such as sign inventory management, road surface condition logging, etc. With increasing costs and shorter budgets, many public works departments have been unable to provide workers with computers.

Realizing the great potential of computers to simplify routine tasks and add productivity to the workplace, the T2 Center is leading a new initiative for 2004 to bring technology training to Rhode Island’s public works’ workers.

With help from the URI Transportation Center and the state surplus office, more than ten surplus desktop computers and twelve laptops are available for loan to Rhode Island public works departments.

The computers come pre-loaded with Microsoft Windows and Office 2000, and pothole and sign management programs. The PCs are not new; most are four to five years old, but they run these basic applications with ease.

“These are not new computers, but they will allow workers to perform simple inventories of potholes, street signs and equipment. They can also be used for scheduling, word processing and in many cases, e-mail.” says John Peterson, Senior Information Technologist at URITC. “We know that computers can save people enormous amounts of time and really increase the productivity of workers. Here’s a way to put these discarded computers to good use.”

Arrangements are also being made for one on one and group training sessions on the use of the applications. “It’s a way that we can take technology to our workforce, without the expense or bureaucracy of securing equipment,” says Jeff Cathcart.

Recycled computers are refurbished and loaned to RI Public Works Departments.

URITC Scomputer Science intern Oksana Emerson prepares a recycled machine for pickup.
RIT2 Training and Professional Development

The RIT2 Center provides training in safety and best practices to transportation practitioners in Rhode Island. Below are examples of these training sessions:

- Utility Cut Issues: 25 Attendees
- Two Cycle Engine Repair: 25 Attendees
- Chain Saw Skills & Safety: 14 Attendees
- Limbing of Fallen Trees: 14 Attendees
- Defensive Driving Techniques: 35 Attendees
- Coffee Break I: 25 Attendees
- Snow Plow Rhodeo: 150 Attendees
- Preparing for Winter I: 14 Attendees
- Preparing for Winter II: 14 Attendees
- Flagger Certification I: 8 Attendees
- RIDOT - DPW Idea Exchange: 35 Attendees
- Preparing for Winter III: 24 Attendees
- Coffee Break II: 14 Attendees
- Flagger Certification II: 11 Attendees

LTAP Hands On Training

Chain Saw Repair Class
Executive in Residence at URITC

In cooperation with the FHWA, the URITC has entered into an intergovernmental personnel agreement (IPA) with the Rhode Island Division Office creating an opportunity to make a positive and constructive contribution to the promotion of FHWA's vital goals within the UTC program. Mr. Daniel J. Berman will help the university to maximize the use of federal funds in the areas of safety and the environment. He will have the opportunity to use his federal aid knowledge and experience in defining training and research needs that directly address FHWA's priority performance areas. The URITC and the NHI (National Highway Institute) partnership will be assisted toward strengthening the program to realize the full potential of the center's resources and benefits of the UTC program.

Mr. Berman is assigned to a one-year detail to the University of Rhode Island Transportation Center (URITC) to assist with program development and the implementation of a stronger program and educational agenda.

Currently Mr. Berman is leading a safety study with the objective of developing a collaborative approach toward establishing school-based safety belt usage rates. The collaboration will involve high schools, colleges, Rhode Island State DOT and the URI Transportation Center, and the insurance industries in Rhode Island. In addition, Mr. Berman will foster the following strategy goals:

2004 Strategic Priority Achievement Goals

• Integrate partnership efforts between URITC and NHI. Development of working groups to understand workforce development issues at state, local and federal level.

• Facilitate and promote potential measures to improve strategies for the National Environmental and Safety Goals via the use of UTC research efforts and partnerships.

• Develop outreach efforts on the application of new market ready technology and innovations at the state and local level. Work with groups such as LTAP, AASHTO, NACE to implement strategic Highway Research products and new technology.

Dan Berman is Assistant Division Administrator of the FHWA Rhode Island Division.
Construction began on adapting the office space vacated by the URI President's and Provost's offices into a new home for the URI Transportation Center. The newly renovated facility will provide the Transportation Center with a 30-seat transportation laboratory, conference and library rooms, and a more central location on the URI quadrangle, close to the planning, business and engineering departments. The Transportation Center should open doors to the renovated facility by the end of Summer 2004.
Education & Outreach
Third Annual National Transportation Week Breakfast

In celebration of National Transportation Week, the URI Transportation Center hosted the Center’s Third Annual National Transportation Week Breakfast, held at the Crowne Plaza Hotel on May 13, 2004.

Highlights of the event included a keynote address by RI Department of Transportation Director James Capaldi, PE, who spoke about “The Changing Environment of Transportation in Rhode Island,” and the signing of a cooperative agreement among the RIDOT, Providence’s Times2 Academy, and the URI Transportation Center to develop high school transportation programs.

RIDOT Director James R. Capaldi was the keynote speaker for the breakfast, highlighting “The Changing Environment of Transportation in Rhode Island.”

“National Transportation Week is an opportunity to celebrate our achievements in transportation and face up to the challenges ahead. It also is an excellent time to convey to the American people how proud we are to be transportation workers. All of us, military and civilian, are proud to serve as members of America’s team. We will continue to foster the strong relationship between industry and government, working as partners to spur economic growth. Working together we will make transportation safer. We also will make it simpler for users to benefit from transportation resources, and we will ensure that investments and systems work smarter.”

Norman Y. Mineta, Secretary of Transportation
Transportation Courses, Seminars, and Training

The URITC hosted a series of courses, seminars and training sessions during the year. As a part of the National Highway Institute/URITC partnership, we offer NHI and FHWA courses to transportation practitioners in the region. We also work closely with the FHWA and the RI Department of Transportation to develop courses, and this year a course on Context Sensitive Solutions was designed and offered. These course offerings are typically one to three day events that take place at the URI conference facility at the Alton Jones Campus, or at an off-campus location. By the nature of the programs, the courses are open to the transportation community but do require advanced registration.

Seminars, on the other hand, are also open to the transportation community but do not require advanced registration. The seminars are typically held on campus and draw more heavily from the academic community. In 2003, the following seminars were sponsored by the URITC:

01/10/2003  Stretching Ability Of Chip Seal Membranes  
Mr. Milton Huston, Civil Engineering, URI

01/24/2003  Dredging in a Changing Scientific and Regulatory Environment  Yr. 2  
Dr. Richard Burroughs, Dr. Lawrence Juda, Department of Marine Affairs, URI

4/24/2003  Exploring Innovative Methodologies of Understanding Space / Time Constraints on Accessibility  
Dr. Talia McCray, Ford Foundation Post-doctoral Fellow Universite Laval, Quebec, Canada

5/14/2003  The Development of a Regional Traveler Information Center with Traveltime Measurement Capabilities  
Dr. Paul W. Shuldiner, Department of Civil and Environmental Engineering University of Massachusetts Amherst

10/3/2003  Enhancing Driving Safety through Proper Message Design on Variable Message Signs  
Dr. Jyh-Hone Wang, Department of Industrial & Manufacturing Engineering, URI

0/10/2003  Liquefaction Potential of Inorganic and Organic Silts  
Dr. Christopher Baxter, Department of Ocean and Civil Engineering, and Dr. George Veyera, Department of Civil and Environmental Engineering, URI.

Dr. Carl-Ernst Rousseau and Dr. Arun Shukla, Department of Mechanical Engineering, URI

Dr. Thomas Boving, Dept. of Geosciences and Dr. Mark Stolt, Dept. of Natural Resources Science, URI

The mission of the National Highway Institute (NHI) is to provide proactive leadership, expertise, resources, and information to improve the quality of the U.S. highway system in order to enhance economic growth, quality of life, and the environment. The NHI develops and delivers training and education in cooperation with its partners to sustain and expand the transportation community’s professional capacity in technologies and strategies thereby accelerating the implementation of the state-of-the-art and continuing to advance the state-of-the-practice.
URITC Research Seminars

10/31/2003  **Web-based Relational Database Portal for Subsurface Geotechnical Data**  
Dr. Daniel Murray, Dr. Jon Boothroyd, Mr. Nasir Hamidzada, Dr. O. Don Hermes and Dr. Anne Veeger, Dept. of Geosciences, URI

12/5/2003  **Calibration of Scour Models using Advanced Sonar Technology for Bridge Safety**  
Dr. James Miller, Dr. Gopu Potty, Dept. of Ocean Engineering, and Dr. Christopher Baxter
Development of a Transportation Planning Program

The RIDOT and the RI Statewide Planning Program have provided funds to establish a transportation planning capability to serve a multidisciplinary program in transportation through the URI Transportation Center. The Transportation Planning Program will include the following activities:

**Course Development**
Transportation planning courses will be developed in consultation with faculty and stakeholder groups. Initially, the individual courses will be developed within the College of Business Administration, but they are intended to be cross-listed in order to serve business, community planning, transportation engineering and social science students. Courses may be at the undergraduate or graduate level depending upon an assessment of university needs. The courses will be consistent with an objective of creating transportation certificate programs. Courses must also be developed consistent with the objective of creating an interdisciplinary transportation management masters program.

**Core Planning Research Capability**
A critical component of the program is the development of a core research capability to address transportation planning issues. Thus, an initial research project will be defined in consultation with the sponsoring agencies. Graduate student(s) will be incorporated into the research project to establish a basis for graduate level work in transportation planning.

**Assessment of Planning Issues of RI Transportation Options**
This program will provide transportation planning expertise to address transportation options and proposals for the state of Rhode Island. Members of the university, faculty, and students, will participate in assessments and research to assure that community and context are appropriately addressed in transportation proposals. This will include short-term issues as well as longer-term considerations.

**State Stakeholder Needs Assessment**
The planning team developed under this program will also work closely with state agencies to assure that the URI TC and the university anticipate and meet the transportation planning needs of stakeholders.
The University of Rhode Island Transportation Center selected Mr. Samuel K. Eisenbeiser as its 2003 Outstanding Student of the Year.

Mr. Eisenbeiser earned his masters in community planning degree from the University of Rhode Island in May of 2003, achieving a GPA of about 3.9. As a graduate assistant, he played a key role in the University of Rhode Island Transportation Center (URITC) funded project “Developing and Applying a Transportation Model for Aquidneck Island.” As part of this effort, he researched transportation models and demonstrated the use of GIS models in case studies related to planning efforts in three towns on Aquidneck Island.

After graduation, Mr. Eisenbeiser accepted a position at Fitzgerald and Halliday, Inc., a full-service planning consulting firm involved in many transportation studies. At Fitzgerald and Halliday, he has worked on a corridor study and performed traffic analyses to optimize roadway lane configurations and signal timing. Prior to his graduate studies at URI, Mr. Eisenbeiser worked as a transportation planner in Connecticut. He also served in the US Coast Guard and was awarded the Guard’s Commendation Medal for outstanding achievement following an active duty tour.

Mr. Eisenbeiser was selected for the 2003 URITC Outstanding Student of the Year award because of his excellent academic achievement and professional background. As an outstanding graduate of the URI Community Planning program, Mr. Eisenbeiser is a promising young transportation planner.

From left to right: Richard Horn, Executive Director of the URITC, Samuel Eisenbeiser, URITC 2003 Student of the Year, and Maria Amador, Assistant Director of the URITC.
Students, faculty and staff needing a quick and easy way to get across campus now have a fleet of reconditioned bicycles at their disposal that they can use for free.

The innovative bike sharing program called URIde provides bikes free of charge for use at any time by students, staff and faculty, as long as they are ridden only on campus and are returned to a campus bike rack when the rider is finished.

Additional bicycles, all donated by Rhode Islanders, will be added to the fleet of URIde bikes later in the year after they have been tuned-up.

The program was launched in September with a Tour de Quad led by President Carothers.

“The idea for the program grew out of a concern for the environment and discussions during the 2001 Honors Colloquium on sustainability. Students were eager to apply ideas they were learning about,” said Lorraine Keeney, coordinator of URI’s sustainability initiative. “We want to discourage the use of cars for short trips across campus and encourage a culture where alternative modes of transportation, including bicycles, are available. Supporting the URIde program is an easy way for the University to serve as a model and provide leadership in the area of sustainable transportation.”

Joining Keeney in leading the initiative is URI senior Alli Fong of Cranston, a marine biology major and avid biker who worked with a group of freshmen in a URI 101 class last fall to introduce her vision and to begin planning the program. “Rather than driving being the only way to get across campus, we want to make biking a viable option,” explained Fong. “As biking on campus becomes the norm, people will bring their own bikes to campus and not just rely on the URIde bikes.”

A few short months after plans for the program were initiated, more than 150 bicycles had been donated from throughout the region, and a Tuesday night bike repair workshop, led by URI Professor David Fastovsky, was established to clean, fix, and paint the donated bicycles.

A URIde Advisory Board was established last winter consisting of faculty, staff and students, as well as URI alumnus Martin Hellewell. “Martin has been our most dedicated volunteer, donating bikes, making the first financial contribution to the project, and giving his time and energy to make the whole program work,” said Keeney.

URI has 21 bicycle racks spread throughout the Kingston campus, with another 21 expected to be available by the end of the school year thanks to the support of URI Parking Services. “We’d rather have URIde than have you drive on campus, so we are supporting this program to hopefully reduce the number of cars driving around campus,” said Patricia Gardner, coordinator of URI Parking Services.

By Todd McLeish, URI News Bureau
Children who attend the University of Rhode Island's transportation camps often get carried away with the experience. They get carried away on ferries, buses, trains, helicopters, canoes and more.

“Our camps are designed to get kids excited about the importance of transportation in society and illustrate the many career paths in transportation,” explained William Croasdale, URI professor of education and the director of the summer camps for children in grades 3 through 8. “It’s hard for children to imagine all the inner workings of the transportation industry, especially when you include the logistics of transporting products to market.”

Offered under the auspices of the URI Transportation Center, a federally funded center of research, outreach and education on the transportation industry, the camps provide hands-on lessons in bridge building, model-train construction, and rocketry, as well as trips on the Essex steam train, a river boat, a Rhode Island Public Transit Authority bus, a high-speed ferry, and canoes. They also tour Mystic Seaport, the nuclear submarine Nautilus, and the R.I. Department of Transportation's central servicing facility in Providence.

“We stress a combination of old transportation methods and new,” Croasdale said. “We also emphasize that one in ten jobs in the U.S. is connected to transportation, and that’s a real revelation to the kids. And to adults, too.”

By Todd McLeish, URI News Bureau

**Camp Sessions**
The camps are primarily geared toward children from urban areas and those from minority groups underrepresented in the transportation industry. The camps run from early July through early-August.

<table>
<thead>
<tr>
<th>Date Range</th>
<th>Site Description</th>
<th>Attendees</th>
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<tbody>
<tr>
<td>July 7 - July 11</td>
<td>Boys and Girls Club of Pawtucket- Grades 4-6 and 7-8</td>
<td>34 attendees</td>
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<tr>
<td>July 14 - July 18</td>
<td>Native American Campers</td>
<td>18 attendees</td>
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<tr>
<td>July 21 - July 25</td>
<td>Times Square/TRAC Programs from Providence- Grade 6-10</td>
<td>20 attendees</td>
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<tr>
<td>July 28 - Aug 1</td>
<td>Times Square/TRAC Programs from Providence- Grade 6-10</td>
<td>20 attendees</td>
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Financial Status
The 2003 budget was approved at $3,669,294, with the Federal component being $1,832,600. The year's expenditures against the budget amount to $1,785,474, of which $973,755 is from the Federal portion.

These funds were allocated to the three primary activities of the Transportation Center and to general administrative expenses of the Center. The allocations against the 2003 Year grant were 62% to research and the direct administrative support for research. Education accounted for 8% of the funds, Technology Transfer and Outreach efforts accounted for 16%, and the General Administration costs amounted to 14%.