National Transportation Center

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The National Center for Transportation Management, Research and Development or National Transportation Center (NTC) for short has produced its first annual report under a new University Transportation Centers Program grant. NTC was reauthorized by the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users last summer. The act authorized the NTC for federal funding from Fiscal Year’s 2006 to 2009. After working extensively on our strategic plan with administrators, faculty, and the NTC Advisory Committee, USDOT-Research and Innovative Technology Administration (RITA) approved the plan on January 11, 2007.

Previous UTC grants transformed the university’s academic programs and research capabilities in transportation, and this transformation has been reenergized by the new grant. We have spent the last few months since plan approval reorganizing the center and refocusing our attention to several research, education and outreach initiatives, and we are pleased to report them to you.

USDOT staff conducted a site visit, which all centers undergo, on June 5, 2007, and it reinforced in our minds that NTC has embarked in the right direction. Our discussions showed that in both education and research, NTC’s plans are appropriate to addressing the nation’s transportation research and workforce development goals.

Transportation Research Board senior staff person, Peter Shaw, visited NTC on August 14, 2007 as part of TRB’s visits to each state’s DOT and universities with transportation programs. This visit also reaffirmed our view that Morgan State researchers and educators have much to offer the transportation community.

Our relationships with funding partners are robust. We would like to thank the Advisory Committee (see members list on following pages) for their assistance in developing these relationships. NTC has a multi-year research funding relationship with Maryland State Highway Administration that has resulted in several major research projects of state and national significance. In addition NTC has excelled in developing internship programs with Maryland DOT agencies for graduate and undergraduate students that are recognized regionally and nationally.

After much reflection during strategic planning and an auspicious start on research and education, we are now committed to even greater progress over the next grant year.

Dr. Andrew Farkas
Director
The National Transportation Center Theme

*Transportation: A key to Human and Economic Development* is the NTC’s theme and mission. This theme means that there is an emphasis on the human impacts of and interactions with multi-modal surface transportation systems, particularly the socio-economic, equity, efficiency, technological and safety aspects. Complementing this theme is the goal of increasing the numbers of well-qualified minorities and women entering transportation careers. NTC’s theme has been particularly appropriate to Morgan State University’s mission as an urban public university that is doctoral granting and research intensive.

Management Structure and Center Staff

The center director is responsible for the comprehensive management of NTC, under the guidance and direction of the Dean of the School of Engineering. The director devises and manages programs and ensures that the center’s objectives and contractual and financial responsibilities are met. The director also reports to the NTC Advisory Committee and seeks their guidance and advice on center activities. The director manages the center staff, setting objectives and appraising performance. The director is also responsible for meeting with RITA staff and University Transportation Center directors from across the nation to share experiences and assist with establishing national priorities for transportation research and education.

Within the NTC there are three permanent full-time positions to support the center’s programs. In addition to the center director, the staffing includes an administrative assistant and project planner. A communications manager/editor and a secretary are contractual employees. All of these positions report directly to the center director. Other contractual personnel may consist of graduate student research assistants and faculty researchers needed to fulfill specific project requirements.
The NTC is located in the Morgan State University School of Engineering. The Center Director, Z. Andrew Farkas, reports to Dr. Eugene DeLoatch, Dean of the School of Engineering.

**Director**

Z. Andrew Farkas

**Administrative Assistant**

Anita Jones

**Secretary**

Sonia McDonald

**Project Planner**

Cyril Peebles

**Communications Manager/Editor**

Ebony R. Edwards
NTC Advisory Committee

Ronald Freeland  
Executive Secretary  
Maryland Transportation Authority

Alfred Foxx  
Director  
City of Baltimore, Dept. of Transportation

Elizabeth Baker  
Regional Administrator  
National Highway Traffic Safety Administration

Jay Watkins  
Chief Executive Officer  
CMTS

Gail McFadden-Roberts  
Community Planner  
Federal Transit Administration

Paul Wiedefeld  
Administrator  
Maryland Transit Administration

Nathan Beil  
President  
KCI Technologies

Edward Power  
Senior Vice President  
HDR Engineering, Inc.

Bob Garrett  
Manager  
Bureau of Municipal Services  
Pennsylvania Dept. of Transportation

Richard Woo  
Director  
Office of Policy and Research  
Maryland State Highway Administration

Clyde Pyers  
Retired  
Maryland State Highway Administration

Nelson Castellanos  
Division Administrator  
Federal Highway Administration
On Thursday, October 26, 2006, Congressman Elijah Cummings presented President Earl Richardson with $990,000, the first installment of a four million dollar grant for the National Transportation Center at Morgan State University. The ceremony took place at the School of Engineering library. In attendance were MSU faculty, staff, students and local media representatives. Dr. Richardson accepted the funding on behalf of the university and the NTC. Dr. Pamela Mack, representing Engineering Dean Eugene DeLoach, echoed the president and spoke on the NTC’s focus on human interaction with transportation systems and its mission to support faculty and students in transportation research.

Dr. Andrew Farkas, director of the center, described how NTC has performed research and education activities of national significance. He explained that among university transportation center institutions, Morgan has had one of the highest percentages of students in transportation related programs that have found employment in transportation upon graduation.

Pictured Above – From Left to Right.
MSU President, Dr. Earl Richardson, Congressman Elijah Cummings, Dr. Pamela Mack and NTC Director Z. Andrew Farkas.
Overview

The transportation research program has selected projects that have particular value in addressing USDOT priority areas and in the education of student researchers. Two of the three new research projects fall into the applied research category and are primarily client funded, but with cost shares from NTC. These projects are being conducted in cooperation with and funding from the Maryland State Highway Administration and were selected through their peer-review research problem statement selection process. The one basic research project underwent a formal peer-review panel evaluation process. NTC solicits basic research by faculty and students with a continuous request for proposals on its website. NTC and faculty researchers continue to seek out applied, funded research by applying directly to research solicitations and by participating on research teams that respond to such solicitations.

The education program on the graduate level has consisted of the transportation engineering concentration within the Doctor and Master of Engineering degrees, interdisciplinary Master of Science in Transportation program, and transportation-related courses within the Master of City and Regional Planning, Master of Landscape Architecture and Master of Architecture degrees.

On the undergraduate level the Bachelors of Science in Civil, Electrical and Industrial Engineering; Business; and Architecture and Environmental design have courses that are transportation-related. In addition the Department of Transportation Studies has begun to offer an Advanced Certificate Program with concentrations in traffic engineering, transportation planning, and transportation management & logistics. The certificate program offers students graduate certificates upon successful completion of 18 credit hours of study.
This year, as a result of courses listed in the new graduate catalogue of the university and discussions with faculty in Industrial Engineering, NTC has designated the Master and Doctor of Engineering with concentration in industrial engineering as an appropriate addition to the transportation education program. The industrial engineering program consists of several courses in logistics engineering and physical distribution, and faculty have prepared for research on goods movement topics.

Graduate students have had opportunities to apply for scholarships and work as research assistants on funded research and as interns at transportation organizations. Five graduate students were selected for the annual Maryland Department of Transportation Internship and eleven undergraduate students have worked as summer interns at Maryland State Highway Administration. Internship programs with the Maryland Transportation Authority and Maryland Transit Administrations are in the planning stages.

In the area of technology transfer NTC has expanded and updated its web site to facilitate internet access to its research documents. NTC has also been participating in the planning of a national conference on transportation access management in cooperation with the Transportation Research Board and Maryland State Highway Administration.
Overview

The National Transportation Center has laid the foundation of opportunity for graduate studies, internships, fellowships and research for many students in the university community. The NTC has developed meaningful relationships and partnerships with some of the area’s leading transportation firms and government agencies within the Maryland, and Washington, D.C. Below is just a snap shot of some of agencies that have employed students as interns and permanent placements.
Research is the backbone of the NTC. Solving real world transportation issues that affect the community and educating students on the research process are the NTC’s highest priorities. NTC goals are to complete research that benefit transportation agencies and organization in our area and across the nation. One of the center’s most recent research projects has evolved out of the non-traditional transportation disciplines of sociology and psychology.

Transfer of Information

All research is published and printed upon successful review. Each project description is posted to the Transportation Research Board website, and once completed, archived on the National Transportation Center website.

Links

National Transportation Center Site

http://www.eng.morgan.edu/~ntc/

Transportation Research Board Site

http://www.trb.org/
New Research Projects

**Estimation of Traffic Recovery Time for Different Flow Regimes on Freeways**

Project#0608- 001

Principal Investigator: Anthony Saka, Ph.D.

The objective of the project is threefold: (1) To develop, calibrate and validate a microscopic simulation model capable of reasonably depicting the prevailing traffic-flow conditions on selected segments of freeways with known design parameters; (2) To develop incident scenarios involving different duration's and traffic intensities, and capturing the resulting traffic recovery times; (3) To develop and document mathematical and/or graphical relationships between incident duration and traffic recovery time for different values of traffic intensity (i.e., volume-capacity ratio).

**The Influence of Custodial Care of Children Among Elderly African Americans on Their Behavior and Transportation Needs**

Project# 0608- 002

Principal Investigator(s): Robert J. Smith, Ph.D. Stella Hargett, PH.D.

The objective of this project is to analyze the increasing trend and the elevated numbers of elderly-headed households who have partial or sole care for children under the age of eighteen. The analysis of this group will allow for a better understanding of this much often neglected group who most often rely on public transportation or the transportation assistance of others. To provide a better understanding of their travel behavior and travel needs, data from the 2002 Nationwide Personal Transportation Survey (NPTS) will be analyzed exploring such variables as age, gender race, income, region of the country, and household structure. The proposed study will also examine a variety of travel descriptors such travel mode, person trips, vehicle trips, and both work and non-work trips.

**Implementation of the Concrete Maturity Meter for Maryland**

Project# SP708B4K

Principal Investigator: Cyril Peebles, Ph.D.

The current study “Use of Maturity Meters in Concrete Acceptance” is evaluating different types of maturity technologies and the ability of lab developed correlation curves to predict the strength of the same concrete mix on subsequent projects. The preliminary results have shown that the maturity concept is viable and that correlation curves can accurately estimate in-place concrete strength. The objective of this study will be to develop a specification that will allow the use of the Maturity Meter method in Maryland.
Completed Research Projects

**Effects of Bus-Stop Spacing on Air Quality in Urban Areas**

Project#0101-004

Principal Investigator: Anthony Saka, Ph.D.

**Factors Influencing the Transportation Patterns of Urban African American Elderly: The Effects of Age, Gender and Residential Location**

Project#0102-005

Principal Investigator(s): Stella Hargett, Ph.D. and Robert Smith, Ph.D.

**Delineating an Integrated, Multifaceted Light Rail Corridor for Northeast Baltimore City**

Project#0102-007

Principal Investigator(s): Claudia Phillips, Ph.D and Hazel Ruth Edwards, Ph.D.

**Spatially Referenced Crash Data System for Application to Commercial Motor Vehicle Crashes**

Project#0102-008

Principal Investigator: Sanjay Bapna, Ph.D.

**Comprehensive Social Equity Study for the Baltimore Urban League**

Project#0102-011

Principal Investigator: Siddhartha Sen, Ph.D.
Completed Research Projects

Effects of Thoroughfares on Residential and Retail Rents and Values in Two Cities
Project# 0101-012
Principal Investigator(s): Charles Carter, Ph.D. Andrew Farkas, PH.D.

Effects of Motorcycle Rider Safety Course on the Risk of Accident and Violation in Maryland
Principal Investigator(s): Carrol Perrino, Ph.D. Ashraf Ahmed, PH.D.

Site Selection for Potential Transit Hubs in the Baltimore Area
Principal Investigator: Glen Robinson, NTC

Analysis and Evaluation of the AVL System and the APC System of the Mass Transit Administration
Principal Investigator: Young Jae Lee, Ph.D.

Development of Fuel Cell Technology for Advanced Vehicle System
Principal Investigator: Seong Lee, Ph.D.

Modeling, Stimulation and Assessment of the Maryland State Police Automotive Safety Enforcement Process
Principal Investigator: Cyril Peebles, Ph.D.

BWI Terminal Accessibility Study
Principal Investigator: Randall Reed, Ph.D.

Impact of the Speeding Fine Function on Driver Coordination on State Highways
Principal Investigator: Randall Reed, Ph.D.
The NTC was proud to announce the recipients of the 2007 Federal Highway Administration Dwight David Eisenhower Transportation HBCU Fellowship. Each Eisenhower recipient will conduct research and will attend the Transportation Research Board Annual Meeting in Washington, D.C. Each Fellowship awardee is expected to develop a fifteen minute presentation on his/her research project at the meeting.

2007 Eisenhower Fellowship Recipients

Mesgana Ayele

Master of Science candidate
Transportation
Morgan State University

Avijit Maji

Doctor of Engineering candidate
Transportation Engineering
Morgan State University

Sutapa Samanta

Doctor of Engineering candidate
Transportation Engineering
Morgan State University

Ogechi Elekwachi

Doctor of Engineering candidate
Transportation Engineering
Morgan State University
Many sponsoring agencies in conjunction with the NTC have given students the opportunity to explore transportation careers fully by offering undergraduate and graduate internships. The Maryland State Highway Administration (SHA) and the Maryland Department of Transportation (MDOT) have been integral parts of the student internship programs at the NTC.

The MDOT Internship was established about 20 years ago for students enrolled in Morgan’s Master of Science degree programs in transportation and graduate degrees in engineering, architecture and planning. The program is designed to provide opportunities for students to gain practical experience in transportation planning and management. Students are placed within the various agencies of MDOT, including port, aviation, mass transit, highway and motor vehicle administrations. Interns function as junior level analysts or planners under the direct supervision of a senior staff member. These paid internships allow students to work in professional environments and foster relationships with mentors within the transportation field.

### 2007 MDOT Graduate Student Interns

**Donnie DeBerry** - SHA, Office of Materials, Technology, Organizational Development and Computer Services Division.

**Akinola Hassan and Lloyd Matthews** - MVA, Employee Development and Training Division

**Jason C. Whaley** - MVA, Project Development Division

**Mohamed Semah** - SHA, Office of Traffic Safety-TDSD
A few years ago, Morgan State University and the State Highway Administration (SHA) established a partnership agreement to facilitate research, training, and student internship opportunities. That partnership agreement continues to assist students in paving successful careers in the industry by offering undergraduate internships for the summer.

### 2007 SHA Undergraduate Student Interns

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<tr>
<th>Office of Real Estate</th>
<th>Employment and Program Equity</th>
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<tbody>
<tr>
<td><strong>Jessica Bracey</strong></td>
<td><strong>Monica Wooden</strong></td>
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<td><strong>Delvan Dorsey</strong></td>
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<tr>
<th>Traffic Engineering</th>
<th>Office of Communication</th>
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<tr>
<td><strong>Kimon E. Johnson</strong></td>
<td><strong>Thais Meadows</strong></td>
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<td><strong>Mariska Jordan</strong></td>
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<th>Office of Highway Design</th>
<th>Office of Policy and Research</th>
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<tr>
<td><strong>Natasha Lyons</strong></td>
<td><strong>Kashun Davis</strong></td>
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<td><strong>Hon Kei Chung</strong></td>
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<th>Office of Traffic Safety</th>
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<tr>
<td><strong>Brian Kamamia</strong></td>
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<th>Highway Safety Office</th>
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<tr>
<td><strong>Pravesh Bonomally</strong></td>
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“*My team teaches me so many things from the best places to eat to how to create a business plan and even business process theories. No college course could give me such valuable variety. Thank you so much. I have considered pursuing the Master of Transportation upon graduation.*”

- Monica Wooden, 2007 SHA Internship Participant
The NTC once again hosted the annual Summer Transportation Institute (STI). For more than a decade the STI program has given high school students in the Baltimore area the opportunity to study transportation first hand through this specialized summer program hosted on the campus of Morgan State University. Students spent four weeks learning and accessing various topics in transportation. Field trips to some of the nation’s most successful transportation models gave students a broader perspective of the transportation mechanisms and methodologies discussed in class room studies.

The 2007 STI selected ten students to participate in this years program. Students experienced a wide variety of class room and off campus instruction related to many transportation models such as rail, land, water and historic transportation.

A closing lunch banquet was held on August 2, 2007 to recognize the students, volunteers, interns, instructors and staff for their hard work and dedication to the program.
On April 30, 2007, the Institute for Transportation and the NTC at Morgan State University held a Spring Transportation Forum designed to equip graduating seniors and other interested students with information on opportunities in transportation. The forum was held at the New Student Union Building on the campus of Morgan State University.

Graduating seniors at Morgan State University had the opportunity to gain first hand information regarding emerging developments in transportation. Students were also briefed on scholarships, internship possibilities, fellowships and research assistantships. MSU faculty and staff were on hand to assist those students interested in pursuing graduate studies in transportation.

Invited guest speakers included faculty from the Morgan State University transportation department, senior leaders from the Federal Highway Administration, Maryland Transportation Authority and from a local private engineering and transportation firm, KCI Technologies.

Pictured Above- Nathan Beil, President of KCI Technologies, speaks to students and faculty members on the professional evolution of transportation and engineering.

Pictured Above- Invited guest speakers of the 2007 Transportation Forum. Dr. Anthony Saka, of the Morgan State University Department of Transportation Studies took the floor for discussion.
On February 21, 2007, the Maryland Department of Transportation and the NTC hosted a Maryland Department of Transportation (MDOT) Black History Month reception for Mr. Albert Ware. Mr. Ware is Director of the Vehicle Safety and Crashworthiness Lab for General Motors North America vehicle operations.

Mr. Ware spoke to MDOT employees, Morgan faculty, students, and staff about his background and circuitous road to a career in transportation at GM. He emphasized to students that employment opportunities in transportation are abundant, they should get a comprehensive education to take advantage of these opportunities, and they shouldn't forget to help others find these opportunities as well.
Mr. Ware is responsible for managing a staff of 200 employees and numerous facilities where testing, development and validation are conducted for all vehicles and systems needed to meet and exceed federal motor vehicle safety standards and GM standards.

Before his current assignment, Mr. Ware spent 17 years in suspension and chassis design and 11 years in other executive leadership roles that included GM global math design strategies and vehicle quality improvement initiatives in product engineering and GM assembly. Mr. Ware received the prestigious Black Engineer of the Year –President Award in 1994. He is a Key Organization Liaison for GM and a director, treasurer and finance chairman for Detroit Area Pre College Education Program, which exposes K-12 students to math science and engineering principles through classroom experience and science projects.
Funding and Expenditures for Grant Year 2006-2007

Total Revenue = $1,997,630

Total Expenditures = $538,787

For grant year 2006-2007, funding consisted of the UTC Grant, a FY 2006 federal grant for research and education through the Federal Highway Administration and Maryland State Highway Administration (SHA), university salaries for NTC personnel, and various research projects and an internship program in cooperation with SHA. Expenditures were heavily administrative, because approximately half of the grant year was spent on strategic planning for the UTC grant and developing the scope of work for the federal/state appropriation. Expenditures for research and education began after the strategic plan and scope of work were approved.