



Research News

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About NETC...

In 1984, the Chief Administrative Officers of five of the six New England state transportation agencies signed a Memorandum of Understanding establishing the New England Transportation Consortium (NETC). The Consortium was formed as a regional approach to developing innovative solutions to common transportation problems among the New England states. Through the Consortium, the region's financial, professional and academic resources are pooled to research and develop improved methods of dealing with common problems in the planning, design, construction, maintenance, rehabilitation, reconstruction, and operation of transportation systems.

NETC's activities include research, technology transfer and training of transportation professionals. The program is intended to supplement, not to replace, ongoing state and federal research activities and other national programs such as NCHRP.

In 1994, the sixth New England state transportation agency joined the Consortium and the Connecticut Transportation Institute (CTI) was selected to manage NETC activities. Currently, NETC has 27 research projects totaling \$2,264,029 under contract with the New England state universities.

The Consortium functions through a committee structure composed of an Advisory Committee, a Policy Committee, and Project Technical Committees. The Advisory Committee develops the annual research program, recommends it to the Policy Committee for approval, and provides oversight of NETC's activities. The Policy Committee approves the annual research program developed by the Advisory Committee and provides funding to carry out the program. The Technical Committees are appointed by the Advisory Committee to provide technical oversight of research projects.

NETC POLICY COMMITTEE

James R. Capaldi, RIDOT; David A. Cole, Maine DOT; James F. Byrnes, ConnDOT; Carol Murray, NHDOT; John Cogliano, Mass Highway Dept.; Patricia McDonald, VT Agency of Transportation; Bradley Keazer, FHWA-CT.

NETC ADVISORY COMMITTEE

William Ahearn, VT Agency of Transportation; Dale Peabody, Maine DOT; Colin Franco, RIDOT; Steven Pepin, Mass Highway Dept.; James Moore, NHDOT; James Sime, ConnDOT; Amy Jackson-Grove, FHWA-CT; Barbara Breslin, FHWA-CT; Robert Lopez-Anito, Univ. of Maine (Orono); David Gress, Univ. of NH; Lisa Aultman-Hall, Univ. of CT; K. Wayne Lee, Univ. of RI; Walea Mogawer, UMass (Dartmouth); James Olson, Univ. of VT.

Highway Researchers See Big Future with Science of the Tiny

A future in which cracked bridges and potholes repair on their own, guardrails realign automatically after impact, bridges adjust their shapes to control movement caused by winds, and metal structures self-clean to avoid corrosion are among the advances in highway technology under forecast by scientists from the Federal Highway Administration's Turner-Fairbank Highway Research Center.

"Highway research and technology leads to safer, simpler and smarter highways," FHWA Administrator Mary E. Peters said. "The improvements we are studying can mean a better quality of life for all Americans. FHWA research engineers have an important role in advancing new technologies to serve the public and improve our nation's highway system."

The self-healing properties of pavements and other structures are only one of the multiple breakthroughs possible in highway technology that scientists are exploring at the Turner-Fairbank Highway Research Center. These advances could be made possible through nanotechnology—the art and science that involves breaking down matter particles at the most minuscule scale of atoms and molecules, invisible to the naked eye, and changing their characteristics. Through this process, properties of matter can be manipulated to achieve better quality.

The science holds great promise for the transportation sector because scientists potentially could manipulate the molecules of cement and asphalt to optimize certain features and create pavements with much better performance. They also could manufacture steel many times more durable and much stronger by rearranging and combining alloy particles.

Nanotechnology has applications in virtually every field including medicine, engineering, manufacturing, electronics and material and computer sciences. The possible uses and benefits in the transportation sector are manifold.

Through computing, for example, sensors embedded into highways could allow engineers to monitor the

processes that contribute to deterioration and cracking without physical intervention.

Similarly, sensors in bridges could monitor vibrations and loads and enable researchers to assess weaknesses and fix them long before they are apparent to human inspectors. Road sensors networks also could gather and provide data to transportation operators to manage congestion and incidents better and detect fast-changing weather conditions.

A recent workshop at TFHRC highlighted these advances. The workshop was conducted with the support of the John A. Volpe National Transportation Systems Center in Cambridge, MA and in partnership with the Office of Science and Technology Policy of the Executive Office of the President, leading research and academic institutions, and other government agencies. These included the National Science Foundation, the Transportation Research Board, Draper Labs, the Scottish Center for Nanotechnology in Construction Materials, John Hopkins University, Northwestern University, University of Southern California, University of Illinois, University of California at Berkeley, the Office of Naval Research, the Department of Energy, and NASA's Langley Research Center.

Research on nanotechnology at the FHWA supports the National Nanotechnology Initiative cutting across several federal agencies and is coordinated by the National Science Foundation under the guidance of the White House Office of Science and Technology Policy.

- Article reprinted from *FHWA Press Room*
(<http://www.fhwa.dot.gov/pressroom/nanotech.htm>)

Visit the NETC website to obtain information on committees, review the status of research projects, contact Principal Investigators, or obtain copies of completed final reports.

<http://www.netc.uconn.edu>

NETC RESEARCH - FY04

At its April 2003 meeting, the NETC Policy Committee approved a recommendation from its Advisory Committee that the following research projects be funded and initiated in FY 2004:

PROJECT NO.	TITLE	AMOUNT
04-1	Recycling Asphalt Pavements Containing Modified Binders	\$110,000
04-2	Driver-Eye Movement-Base Investigation for Improving Work Zone Safety	\$75,000
04-3	Estimating the Magnitude of Peak Flows for Steep Gradient Streams in New England	\$120,000
04-4	Determining the Effective PG Grade of Binder in RAP Mixes	\$130,000
04-5	Network-Based Highway Crash Prediction Using Geographic Information Systems	\$104,000
04-6	Development of Truck Lane Design Software That Uses A Current Model of Truck Performance	\$50,000
TOTAL=		<u>\$589,000</u>

Project Technical Committees for the above projects, consisting of representatives from the six New England state transportation agencies and the FHWA Division Offices are being formed. The committees will provide technical oversight of the projects.

MASSACHUSETTS HEADS UP NETC'S POLICY AND ADVISORY COMMITTEES

The Consortium's Policy Committee is chaired by John Cogliano, Commissioner, Massachusetts Highway Department and its Advisory Committee is chaired by Stephen Pepin, Manager of Research, Massachusetts Highway Department. Their terms of office are July 1, 2002 to June 30, 2004. To facilitate communication between the chairpersons of these two committees, it is the policy of the Consortium to select the chairpersons from the same state.

The primary responsibility of the Policy Committee, which is composed of the Chief Administrative Officers of the New England state transportation agencies, is to provide funding for the Consortium and approve its annual research program.

The primary responsibility of the Advisory Committee, which is composed of the Managers of Research of the New England state transportation agencies, is to provide, develop and recommend an annual research program to the Consortium's Policy Committee and provide oversight of the operation of the Consortium.

\$502,375 IN RESEARCH FUNDING AWARDED TO FOUR NEW ENGLAND STATE UNIVERSITIES

The NETC Advisory Committee, at its April 2003 meeting awarded funding for the following research:

PROJECT No.	P. I., PROJECT TITLE and UNIVERSITY	AMOUNT
02-1	Relating Hot Mix Asphalt Pavement Density to Performance Wala Mogawer University of Massachusetts, Dartmouth	\$100,000
02-6	Sealing of Expansion Joints Ramesh Malla University of Connecticut	\$75,000
03-1	Ability of Wood Fiber Materials to Attenuate Heavy Metals Associated with Highway Runoff Allison MacKay University of Connecticut	\$72,000
03-3	Feasibility Study of an Erosion Control Laboratory in New England Kenneth Demars University of Connecticut	\$30,000
03-4	Measuring Pollutant Removal Efficiencies of Stormwater Treatment Units Xiaoqi Zhang University of Massachusetts, Lowell	\$80,000
03-5	Evaluation of a Field Permeameter as a Longitudinal Joint Quality Control Indicator Jo Sias Daniel University of New Hampshire	\$75,000
03-7	Basalt Fiber Reinforced Polymer Composites Richard Parnas University of Connecticut	\$60,000

Agreements are now being prepared for the above research projects. Work is expected to begin in September 2003.

Web Resources...

www.netc.uconn.edu

The NETC website. Information on the status of research projects. Download and order NETC publications.

www.nawgits.com

The National Associations Working Group for Intelligent Transportation Systems (ITS). The Group provides materials needed to enable a broad range of constituents to make informed decisions about ITS.

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Web Resources... *Cont'd. from Page 4*

www.itspublicsafety.net

The ITS Public Safety Program encourages transportation and public safety agencies to better integrate on-scene incident response, clearance, and recovery operations. This site provides information on new technologies and coordinated traffic incident management.

www.walkinginfo.org

The Pedestrian and Bicycle Information Center is a clearinghouse for information on pedestrian and bicycling issues, including planning, engineering and enforcement.

www.useit.umeciv.maine.edu

The University of Maine Department of Civil Engineering web site on the beneficial use of non-municipal solid waste. Information on tire chips and case studies of their use in transportation projects are cited.

www.fhwa.dot.gov/ohim/

The FHWA Office of Highway Policy Information site. It is a repository of information on: Highway Statistics, Highway Performance Monitoring Systems, Motor Fuel & Highway Trust Fund, Nationwide Personal Transportation Survey, Traffic Volume & Truck Weight.

www.fhwa.dot.gov/environment/

The FHWA Office of Planning, Environment, and Realty site. Provides information on: legislation, regulations, publications, training, and contacts regarding Statewide and Metropolitan Transportation Planning, the Human and Natural Environment, and Realty.

www.nationalacademies.org/trb/

The Transportation Research Board site. Provides information on the Annual Meeting, publications, programs, resources, and committees.

www.ops.fhwa.dot.gov/OpsSecurity/

Provides information on emergency planning for surface transportation systems.

State Transportation Agencies Appoint Chairpersons for Project Technical Committees for NETC FY 2003 Research Projects

Project No.	Project Title	Committee Chairperson
02-1	Relating Hot Mix Asphalt Pavement Density to Performance	Richard Bradbury, Maine Dept. of Transportation
02-6	Sealing of Expansion Joints	Robert Fura, Rhode Island Dept. of Transportation
03-1	Ability of Wood Fiber Materials to Attenuate Heavy Metals Associated with Highway Runoff	Peter Newkirk, Maine Dept. of Transportation
03-3	Feasibility Study of an Erosion Control Laboratory in New England	Donald Larson, Connecticut Dept. of Transportation

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Technical Committees - Cont'd. from Page 5

Project No.	Project Title	Committee Chairperson
03-4	Measuring Pollutant Removal Efficiencies of Stormwater Treatment Units	Michael DeRotto, Rhode Island Dept. of Transportation
03-5	Evaluation of a Field Permeameter as a Longitudinal Joint Quality Control Indicator	Richard Bradbury, Maine Dept. of Transportation
03-7	Basalt Fiber Reinforced Polymer Composites	Anne-Marie McDonnell, Connecticut Dept. of Transportation

NETC Submits Results of Completed Research Projects to AASHTO's Technology Implementation Group for Consideration for Designation as INNOVATIVE TECHNOLOGIES...

"Design Recommendations for the Use of Tire Shreds/Soil Mixtures to Limit Frost Heave and Damage of Secondary Paved Roads" - *Dana Humphrey, University of Maine*

"Performance Specifications for Wood Waste Materials as an Erosion Control Mulch and as a Filter Berm" - *Kenneth Demars and Richard Long, University of Connecticut*

"Design Criteria for Using Tire Shreds as Lightweight Backfill for Retaining Walls"
-*Dana Humphrey, University of Maine*

"The New England Transportation Consortium 2-Bar, Curb-Mounted Bridge Rail"
-*Designed by the Bridge Design Section, Maine Dept. of Transportation, for the NETC*

"The New England Transportation Consortium 4-Bar, Sidewalk-Mounted Bridge Rail"
-*Designed by the Bridge Design Section, Maine Dept. of Transportation, for the NETC*

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