



Research News

Volume 4, Number 2

Summer 2005



RECENT HAPPENINGS

Message from NETC's Interim Coordinator

Dear Colleagues,

I invite you to contact me with any problems or concerns as I "learn the ropes" while acting as Interim Coordinator of the NETC.

I may be reached by phone at (860) 486-4396, by email at aultman@engr.uconn.edu, or by mailing to: New England Transportation Consortium, 179 Middle Turnpike, Unit 5202, Storrs, CT 06269-5202.

The new NETC management team will be announced in the early fall.

Sincerely,

Lisa Aultman-Hall
Interim Coordinator

Did you know?...

Over the last decade, NETC has funded **66 research projects** conducted by **74 different investigators** at the **8 campuses** of the New England public universities. Other special projects have been funded at private universities or agencies outside of New England. This group adds another **5 projects and 10 investigators** to the decade totals for NETC.

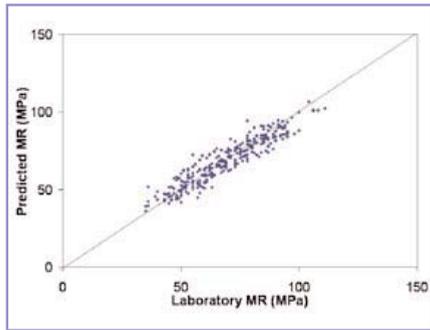
Update on the '06 NETC Series Projects

During their Spring meeting, the NETC Advisory Committee selected 5 projects for funding in FY 2006. As a side note, this meeting involved a new procedure in that your university reps had a vote on project selection. Technical Committees have now been formed for each project. These committees will meet in September for orientation. The committees will finalize the scopes of work and formal RFPs will be issued this coming fall. A list of project names may be found on the NETC website at http://www.netc.uconn.edu/ti/Research/rfp_current.html.



RESEARCH HIGHLIGHTS

NETC 02-3: Establish Subgrade Support Values for Typical Soils in New England



The main objective of this research is to develop, based on analysis of relevant existing data and appropriate laboratory validation testing, prediction models to obtain typical support values (or range of the typical values) for subgrade soils that are found in New England according to AASHTO soil classification.

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Figure:
Predicted Resilient Modulus (MR) vs. Laboratory MR for A-3 soils

Crash Testing Sidewalk-Mounted Bridge Rails

In two previous projects, the New England Transportation Consortium (NETC) developed and crash tested two steel bridge rail systems - a 2-Bar Curb-Mounted system and a 3-Bar Sidewalk-Mounted system. The NETC 2-Bar Curb-Mounted Bridge Rail was tested to Performance level 2 (PL-2) in accordance with the AASHTO Guide Specifications for Bridge Railings and was effectively accepted as a NCHRP Report 350 Test Level 4 (TL-4) railing by the FHWA Office of Highway Safety. The NETC 4-Bar Sidewalk-Mounted Bridge Rail met evaluation criteria for an NCHRP Report 350 traffic barrier at TL-4. The FHWA Office of Highway Safety Infrastructure has concluded that both bridge rails are acceptable as TL-4 designs and may be used on the National Highway System.



The objective of the proposed research study, as stated in the NETC request for proposal, is to "...qualify four NETC transitions to TL-3 requirements of NCHRP Report 350 by performing and reporting the results of the two above noted crash tests. A third test may also be included to quantify the concrete end wall transition behind a sidewalk to TL-4."

The New Hampshire Transition (2-Bar Curb-Mounted) successfully contained and redirected the pickup for TL-3 test conditions. All occupant risk values were acceptable. The Massachusetts Transition (3-Bar Sidewalk-Mounted) successfully contained and redirected both the pickup and the single unit truck for TL-4 test conditions. All occupant risk values were acceptable where applicable. This report presents the details of each installation tested, a description of the testing, and assessment of the tests.

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NETC 01–1: Advanced Composite Materials for New England's Transportation Infrastructure: A Study for Implementation and Synthesis of Technology and Practice

Sergio F. Breña and Scott A. Civjan of the University of Massachusetts, Amherst conducted research to investigate the use of FRP (fiber-reinforced polymer) products in transportation infrastructure in New England. They sought to establish a forum for information exchange about FRP, identify the impediments on the use of FRP, and to conduct meetings with participants to promote information exchange. They succeeded in creating a database of FRP composite manufacturers in New England, conducting surveys with manufacturers and engineers within state transportation agencies on the impediments of implementation, contacting researchers in New England to summarize research efforts, establishing joint meetings between manufacturers and end users and creating a website as a means to increase communication.

Their research showed the applications of FRP composites in New England bridges, while stating that the most common applications of FRP materials in New England are: bridge decks, reinforcement in concrete structures, and plates of sheets for repairs and strengthening. Through surveys, they identified the perceived impediments for the use of FRP composites, including cost, long-term performance, lack of codes and standards, lack of inspection procedures, and the fragmentation of FRP composites industry. They also identified potential applications of FRP composites in transportation infrastructure, including manholes, culverts, piping, guardrails/bridge railing, signposts, piles, and sound barriers.



The researchers were able to create steps to promote the use of FRP products, which included increasing the database of demonstration projects, monitoring existing field applications to develop confidence on performance of products, familiarizing engineers with the new material, developing a list of pre-qualified products, and closing communication between producers and end users.

For more information on the project, visit the project website: http://www.ecs.umass.edu/cee/NETC_01-1.
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Dr. Scott A. Civjan, University of Massachusetts, Amherst civjan@ecs.umass.edu

NETC 03–1: Remediation of Roadway Runoff with Wood Fibers

Traffic related activities lead to the deposition of hazardous contaminants on roadway surfaces making roadway runoff a potential threat to receiving waters. Runoff needs to be remediated before it reaches surface waters and wood chips constitute a simple, economic and effective method for removing contaminants. Laboratory tests have confirmed that the wood chips subjected to various field conditions can significantly decrease contaminant levels.

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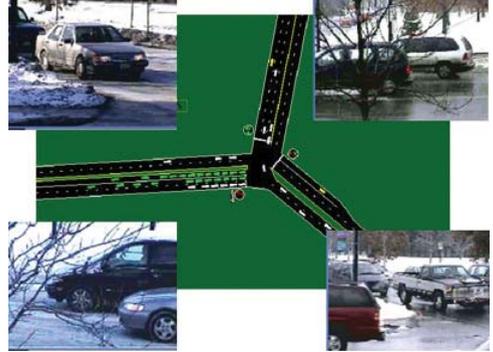
Graduate student, Stephanie M. Syring, runs laboratory tests for NETC03-1



RESEARCH HIGHLIGHTS – Cont'd.

NETC 02-7: Validating Traffic Simulation Models to Inclement Weather Conditions with Applications to Arterial Coordinated Signal Systems

Congestion along arterial systems in New England is often the result of adverse weather conditions, which typically change the normal traffic flow parameters and render the normal signal plans unsuitable. This study had two main objectives: (1) to assess the impact of inclement weather on traffic flow parameters at signalized intersections; and (2) to evaluate the likely operational benefits of implementing weather-specific timing plans. Traffic flow under normal and inclement weather conditions were carefully observed over two winter seasons, revealing that inclement weather does have a significant impact on the values of saturation headways, particularly once slushy conditions start developing or once snow begins to stick to the ground. Using four case studies, two from Vermont and two from Connecticut, the research also showed that operational benefits are to be expected from implementing weather-specific timing plans, and that these benefits depend upon the traffic volumes, geometric configuration of the corridor and the duration of the inclement weather event.



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WEB SITES

Council of University Transportation Centers (CUTC): <http://cutc.tamu.edu/index.asp>

Go to http://cutc.tamu.edu/about/intellectual_capital.pdf to read the position paper of the Strategic Alliance for the Advancement of Transportation entitled "Investment in Transportation, Education and Research: the Source of Intellectual Capital, Knowledge and Innovation in Transportation" posted on the CUTC website.

The editor welcomes the submission of articles, issues of interest and useful web links, as well as updates and photos of current research projects, for inclusion in future issues of **Research News**. Reprints of articles must be accompanied by publication name, date, author and any other pertinent information for assigning proper credit.

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