



# CONNECTICUT DEPARTMENT OF TRANSPORTATION

## Research and Implementation Activities



In-house research projects are conducted and/or administered on a wide range of topics. A representative sample is described below for the period July 1, 2001 thru June 30, 2002. For more information on these projects, please contact the staff member listed.

### ***Automated Bridge Monitoring***



In cooperation with the FHWA and the University of Connecticut, ConnDOT is developing a network of nine in-service bridges that are being retrofitted with automated monitoring systems. They will monitor a variety of structural parameters that include vibration, strain, tilt, and temperature variations in the bridges' cross-section. Monitoring of these parameters will be done on a long-term basis. The first of these systems was installed in August of 1998. Currently three systems are on-line. Future systems will be placed on bridges of various types and sizes. Contact Paul D'Attilio at (860) 258-0305 or [Paul.Dattilio@po.state.ct.us](mailto:Paul.Dattilio@po.state.ct.us)

### ***Performance Evaluation of Whitetopping and Superpave***



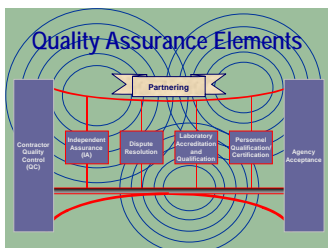
A project was initiated in 2002 to evaluate the performance of Whitetopping (Portland Cement Concrete pavement overlay) and a Superpave PG 76-22 mix design at an interchange on I-95 in Milford, Connecticut. This interchange has a high volume of trucks utilizing it due to the existence of truck service areas in the vicinity. During five years of in-service monitoring, the pavements under study will be evaluated for wheel path rutting and cracking. It is anticipated that both pavement designs will lengthen pavement service life at this interchange, and reduce time spent maintaining the roadways and subsequent user delays. Contact Erika Smith, P.E. at (860) 258-0701 or [Erika.Smith@po.state.ct.us](mailto:Erika.Smith@po.state.ct.us)

### ***Alternative Merge Sign at Signalized Intersections***



Some signalized intersections utilize an additional through lane to increase capacity through the intersection. In situations where the extra lane ends shortly beyond the intersection, a merge is required. This research study is to develop, field test, and evaluate prototype warning signs that will improve the traffic flow and merging pattern. The trial signs, consisting of a symbol, text, or both, will be installed at two intersections in Connecticut during 2002. The intersections will be monitored before and after the trial signs are installed via video cameras. Contact Eric Feldblum at (860) 258-0392 or [Eric.Feldblum@po.state.ct.us](mailto:Eric.Feldblum@po.state.ct.us)

### ***Quality Assurance Specifications for HMA Construction***



This project was initiated to dedicate resources to assist a ConnDOT Task Force in the implementation of a Quality Assurance (QA) program for Hot-mix asphalt pavement. Specific focus projects will be used to evaluate the performance of QA procedures and provide feedback for revisions to QA specifications, if needed. Criteria for measuring costs and benefits of the QA program will be developed, as well as a QA manual for use by ConnDOT Construction personnel and New England contractors doing work in Connecticut. Contact Edgardo Block, P.E. at (860) 258-0303 or [Edgardo.Block@po.state.ct.us](mailto:Edgardo.Block@po.state.ct.us)

### ***Use of Streaming Media for Research Dissemination and Training***



Streaming media provides for synchronized and accelerated delivery of web-based multimedia to the desktop, while conserving network bandwidth. This technology will enhance communication within the Department and facilitate the dissemination and implementation of research findings. A three-phase study was undertaken on streaming-media production tools, client players and server-side applications from Microsoft, RealNetworks and Apple. These three platforms are being evaluated for their potential in providing on-demand access to research-project video-based documentation, via the DOT Intranet. Contact Drew M. Coleman, at (860) 258-0310 or [Drew.Coleman@po.state.ct.us](mailto:Drew.Coleman@po.state.ct.us)

## Evaluation of Alternative Fuel Vehicles



Data and information about the performance of alternative fuel light trucks and automobiles are being acquired for analysis and to provide guidance to aid state officials that must comply with Section 5007(o) of the Energy Policy and Conservation Act of 1992 (EPACT). Vehicles powered by either compressed natural gas or electricity are being evaluated in the context of Connecticut state fleet needs. Under EPACT, in fiscal year 2001 and beyond, 75% of the state fleet new purchases of light trucks and automobiles must be for models that do not operate on either gasoline or diesel fuels. Contact James M. Sime, P.E. at (860) 258-0309 or [James.Sime@po.state.ct.us](mailto:James.Sime@po.state.ct.us)

## Implementation of Personal Digital Assistants (PDAs) for Superpave Field Data Collection



To better collect hot-mix asphalt test data during Superpave paving projects, ConnDOT personnel have developed a data collection package using personal digital assistant (PDA) devices. This interactive system uses preloaded project data, plant performance information, mix design tables and inspector assignments to replace existing paper, pencil, calculator and bubble-sheet systems for data collection. With typical configurations costing about \$300 per inspector, this offers a lower initial cost, lower total cost of ownership, and easier software systems management when compared to portable computers. Contact Richard C. Hanley, P.E. at (860) 258-0374 or [Richard.Hanley@po.state.ct.us](mailto:Richard.Hanley@po.state.ct.us)

## Quartz-Piezo Weigh-in-Motion



Connecticut was the first state in the nation to install a state-of-the-art Quartz-Piezo Weigh-In-Motion system on an in-service highway. In cooperation with FHWA's Priority Technology Program, sensors were installed on Route 2 in Lebanon, CT. The four lanes of installed sensors are being monitored for accuracy and survivability. The study includes the conductance of field validations using trucks of known weight. Reports are available upon request. Contact Anne-Marie H. McDonnell, P.E. at (860) 258-0308 or [Annemarie.Mcdonnell@po.state.ct.us](mailto:Annemarie.Mcdonnell@po.state.ct.us)

## Implementable Research Products

Merritt Parkway Guiderail



Digital Versatile Disk for Photolog



Connecticut Impact Attenuation System



Narrow Connecticut Impact Attenuation System



Connecticut Truck Mounted Attenuator



## Cooperative Research Program

In addition to in-house research, under State statutes, the University of Connecticut (UConn) is authorized to perform research activities for ConnDOT under the guidance of the Joint Highway Research Advisory Council, a group composed of members from ConnDOT and the Civil and Environmental Engineering Department at UConn. Over 140 research studies have been performed under the Cooperative Research Program since its inception in the 1950's.

Questions regarding this program, as well as any of the highlighted projects, can be addressed to

Mr. James M. Sime, P.E., Manager of Research,

Voice (860) 258-0309, Fax (860) 258-0399, Email [James.Sime@po.state.ct.us](mailto:James.Sime@po.state.ct.us)

Additional information including the Annual Summary of Activities is available at the following web address:

<http://www.dot.state.ct.us/bureau/eh/ehcn/research/index.html> or contact:

Mr. Keith R. Lane, P.E.

Director of Research and Materials

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Voice (860) 258-0371 Fax (860) 258-0399

Email [Keith.Lane@po.state.ct.us](mailto:Keith.Lane@po.state.ct.us)



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