



# 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, 2004 thru June 30, 2005. Additional information including the Annual Summary of Activities is available at the following web address: <http://www.ct.gov/dot/research>. For more specific information on these projects, please contact the staff member listed.

### ***New Technologies for Photolog Image and Data Acquisition***



A final report is anticipated this summer on high-resolution and high-definition in-vehicle cameras and image storage systems for upgrading ConnDOT's photolog vehicles. High definition will allow for advanced pattern recognition of roadway and roadside features. The report will also present an evaluation of a production version of an automated bridge under-clearance device. Identification of precise bridge clearances will aid in the routing of oversize/overweight commercial vehicles during the permitting process. Contact Brad Overturf at (860) 258-0319 or [bradley.overturf@po.state.ct.us](mailto:bradley.overturf@po.state.ct.us)

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



A final report is anticipated this summer on streaming media production tools, server, and client viewing software from 'Microsoft,' 'RealNetworks,' and 'Apple.' Streaming audio, video, text and graphics conserves bandwidth while supporting handicapped accessibility. An Internet-based server provides a streaming media capability for webcasting conferences, meetings and on-demand distance learning. Streaming media has enhanced ConnDOT's internet presence and mission. On-demand presentations are currently accessible at <http://www.ct.gov/dot/video>. Contact Drew M. Coleman, at (860) 258-0310 or [drew.coleman@po.state.ct.us](mailto:drew.coleman@po.state.ct.us).

### ***Enhancements to ConnDOT's Pavement Friction Testing Program***



The need exists to upgrade Connecticut's friction testing equipment and to refine and implement the latest practices for the collection and analysis of pavement skid resistance. The objectives of this project are to (1) update friction number speed correction factors based upon pavement mix designs currently in use, (2) research relationships between texture and friction, (3) evaluate the potential use of the International Friction Index (IFI) for Connecticut, (4) obtain a new ASTM E274 pavement friction tester, and (5) implement appropriate latest technology and procedures for pavement friction data requests, collection and processing. Contact Eric Feldblum at (860) 258-0392 or [eric.feldblum@po.state.ct.us](mailto:eric.feldblum@po.state.ct.us).

### ***Assessing ConnDOT's Portland Cement Concrete Testing Methods***



In order to determine why some cured specimens were not attaining required 28-day strength, the following research study objectives were set forth: (1) clarify application of the procedures contained in ASTM C 31 "Making and curing concrete test specimens in the field," in order to reduce occurrences of low-strength test results for otherwise acceptable concrete, (2) evaluate and demonstrate the use of the concrete maturity method for determining real-time in-place concrete strength, and (3) compare two or three maturity devices to determine which, if any, is most appropriate for ConnDOT applications. Contact John Henault at (860) 258-0352 or [john.henault@po.state.ct.us](mailto:john.henault@po.state.ct.us).

### ***Field Evaluation of Concrete Containing Disodium Tetrapropenyl Succinate (DSS)***



In 2002, a corrosion inhibitor (DSS) was added to class "F" concrete to evaluate the effects of de-icing chemicals on reinforcing steel. The trial mixes with DSS demonstrated they met the requirements for slump, air entrainment and compressive strength. A total of 25 single-sided f-shape barriers were fabricated with the DSS additive, and another 25 were fabricated using the standard mix design. The barriers were placed in the westbound direction of I-84 in Cheshire. Half-cell probes were placed in both sets of barriers, and measurements for corrosion monitoring will be taken four times annually. Contact Paul D'Attilio at (860) 258-0305 or [paul.dattilio@po.state.ct.us](mailto:paul.dattilio@po.state.ct.us).

## ***CTTransit Demonstration and Evaluation of Hybrid Diesel Electric Transit Buses***



A final report is due this summer on an evaluation of hybrid diesel-electric heavy-duty transit buses in order to identify the next generation of transit vehicles for future fleet replacement. Demonstration buses are being evaluated for operational costs, reliability, emissions, fuel economy, and maintenance/repairs. Data are being compared with similar data from standard heavy-duty diesel powered buses. A life-cycle cost analysis will be performed. The research is being conducted under the direction of a project team composed of ConnDOT, Connecticut Transportation Institute, Connecticut Academy of Science and Engineering, the East Coast Hybrid Consortium, and vehicle manufacturers. Contact James Sime, at (860) 258-0309 or [james.sime@po.state.ct.us](mailto:james.sime@po.state.ct.us).

## ***Long Term Pavement Performance (FHWA-LTPP) Monitoring and Weigh-In-Motion Studies***



Connecticut is an active partner in the Long Term Pavement Performance (LTPP) program, and maintains five experimental test sites. In conjunction with collecting the traffic data needed at these test sites, ConnDOT conducted research on weigh-in-motion (WIM) sensor performance and durability. Through this research, Connecticut was the first state to install and evaluate quartz-piezoelectric WIM sensor technology. Reports are available on WIM, and a summary of efforts in Connecticut from 1987-2002 for the Strategic Highway Research Program (SHRP), which included LTPP. 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).

## **Connecticut Cooperative Research Program**

In addition to in-house research, under CT 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 150 research studies have been performed under the Cooperative Research Program since its inception in the 1950's. Three currently active projects are highlighted below. Descriptions of other projects being performed at the University of Connecticut, Connecticut Transportation Institute can be found at [http://www.engr.uconn.edu/ti/Research/cti\\_research.html](http://www.engr.uconn.edu/ti/Research/cti_research.html)

### ***Value Pricing in Connecticut, Project 05-6***

This study will develop an array of realistic value pricing scenarios for Connecticut, determine network response to pricing policy scenarios, and determine the economic impact of policy simulations to Connecticut. Contact Norman Garrick at (860) 486-2990.

### ***Designing Roads that Guide Drivers to Choose Safer Speeds, Project 04-6***

The objective of this research study is to determine: how the prevailing road characteristics, such as geometry and roadside environment, influence the actual vehicle travel speeds; how the actual travel speeds along with these road characteristics influence the incidence of crashes; and, how to design the safest road for a given condition. Contact John Ivan at (860) 486-2074.

### ***Design and Feasibility Study: Connecticut Transportation Planning, Project 05-7***

This study will rank and prioritize the household travel data needs of Connecticut transportation planners and evaluate the available options, including new technology-driven options to routinely collect these data. Contact Lisa Aultman-Hall at (860) 486-2717.

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.ct.gov/dot/research> or contact:



**Mr. Keith R. Lane, P.E.**

**Director of Research and Materials**

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