



# CONNECTICUT DEPARTMENT OF TRANSPORTATION

## Research and Implementation Activities - FY98



Seventeen in-house research projects were conducted and/or administered during 1997/98 on a wide range of topics. A representative sample is described below. For more information on these projects, please contact the staff member listed.

### ***Quartz-Piezo Weigh-in-Motion (WIM)***



Connecticut is 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, the system was installed in October of 1997 on CT Route 2 in Lebanon, CT to collect data for the Superpave SPS 9A Study described below. The original quartz sensors (shown at left) were replaced with upgraded sensors in July of 1998. Contact Anne-Marie H. McDonnell, P.E. @ (860)258-0308 or AM\_ConnDOT@Compuserve.com.

### ***Merritt Parkway Guiderail (MPG)***



Originally constructed during the 1930's, Connecticut's Merritt Parkway was designated a National Historic Landmark in 1991. In order to maintain and restore unique characteristics of the Parkway, ConnDOT has designed and crash-tested a steel-backed, rustic timber guiderail system to be installed on future Merritt Parkway projects. This system, "Merritt Parkway Guiderail (MPG)," meets the safety performance guidelines of NCHRP Report 350 Test Level 3, and is FHWA-approved for use on the National Highway System (NHS). The first field installations of MPG will be completed during 1998. Contact Eric C. Lohrey, P.E., (860) 258-0303 or ECL\_ConnDOT@Compuserve.com.

### ***Superpave Implementation***



ConnDOT's first full-scale Superpave pavement was placed on a section of CT Route 2 in southeastern Connecticut in 1997. This project is one of thirty-five sites in North America participating in FHWA's LTPP special pavement study 9A. The project was also a Showcase for New England under FHWA Demonstration Project #90. A construction report on the project is currently available. Additional Superpave installations are scheduled during 1998. Contact Donald A. Larsen, P.E., @ (860) 258-0301 or Donald.Larsen@po.state.ct.us

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



In cooperation with the FHWA and the University of Connecticut, ConnDOT is developing a network of seven 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. Future systems will be placed on bridges of various types and sizes. Contact Robert G. Lauzon, Ph.D., P.E., @ (860)258-0305 or RLauzon\_CTDOT@Compuserve.com

### ***Next Generation Photolog***



ConnDOT continues to utilize state-of-the-art data collection techniques in its yearly pass over the state-maintained highway network. The computer-based modular design of the two photolog vehicles allows digital video cameras to capture forward, side and downward views of the roadway and its surroundings as well as other linear-referenced engineering and geometric data. Currently under development or evaluation are a road surface texture meter and a bridge under-clearance measurement device. Contact John H. Hudson @ (860) 258-0316 or John.Hudson@po.state.ct.us

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### **Cooperative Research Program**

Under State statutes, the University of Connecticut (UConn) is authorized to perform research activities for ConnDOT under the guidance of a Joint Highway Research Advisory Council, a group composed of members from ConnDOT and the Civil and Environmental Engineering Department at UConn. Over 125 research studies have been performed under the Cooperative Research Program since its inception in the 1950's. Some of the recent projects are briefly described below.

#### ***Evaluation of Source Separated Compost***



Under a grant from the U.S.EPA and in cooperation with the CT Department of Environmental Protection, compost products from Connecticut sources were sampled and laboratory tested for physical and chemical properties. Dr. Richard Long and Dr. Ken Demars designed and monitored installations to evaluate the materials as erosion control mulch, with and without seeding, on a 2:1 slope, and as an erosion control filter berm at toe of slope. Following the study, ConnDOT developed and adopted a compost materials specification.

#### ***Estimating Benefits of Safety Improvements***



The first phase of this project is to develop a procedure for predicting the success of specific accident reduction treatments, considering the features of the highway site. The focus of this phase has been to determine the feasibility of using existing ConnDOT data sources to support such an analysis by selecting a few rural highway sites where specific treatments have been used. ConnDOT photolog images (typical front-facing image shown at left) are the major data source utilized for this study by Dr. John Ivan.

#### ***Protection of Steel Reinforcement in Concrete***



Two non-proprietary low-cost admixtures to protect the steel reinforcement in portland cement concrete are being investigated by Dr. Jack Stephens and Dr. Greg Frantz. Basic mix properties such as freeze-thaw durability, compressive strength, and percent of air voids have been determined. Corrosion rates are being measured using SHRP-recommended linear polarization techniques on concrete slabs and cylinders containing #4 reinforcement.

Questions regarding this program, as well as any of the highlighted projects, can be addressed to  
Mr. James M. Sime, P.E., Assistant Manager of Research,  
@ (860) 258-0309 or James.Sime@po.state.ct.us



For a copy of the Summary of Activities covering these programs or general information regarding the ConnDOT Research Program, contact:

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