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, 2002 thru June 30, 2003. For more information on these projects, please contact the staff member listed.

New Technologies for Photolog Image and Data Acquisition

The Connecticut Transportation Institute is conducting an in-depth study of digital imaging acquisition hardware, including high-resolution and high-definition in-vehicle cameras and image storage systems for upgrading the current ConnDOT photolog vehicles. High definition will allow for advanced pattern recognition of roadway and roadside features. The study will also evaluate, for implementation on photolog vans, 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

Quality Assurance Specifications for HMA Construction

This project was initiated to dedicate resources to assist a ConnDOT HMA Task Force in the implementation of a Quality Assurance (QA) program for Hot-mix asphalt pavement. Specific focus projects are being used to evaluate the performance of QA procedures and provide feedback for revisions to QA specifications. Sampling behind the paver was evaluated during 2002. A QA manual for use by ConnDOT Construction personnel and New England contractors doing work in Connecticut has been developed. Criteria for measuring costs and benefits of the QA program will also be developed. Contact Edgardo Block, P.E. at (860) 258-0303 or Edgardo.Block@po.state.ct.us

Automated Bridge Monitoring Systems

In cooperation with the FHWA and the University of Connecticut, ConnDOT is developing a network of 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. Four systems have been installed to-date and are on-line. Three more systems are currently under development, including an installation on the new Sikorski Bridge crossing the Housatonic River on the Merritt Parkway (a National Historic Parkway.) Contact Paul D'Attilio at (860) 258-0305 or Paul.Dattilio@po.state.ct.us

Alternative Merge Signs at Signalized Intersections

Some signalized intersections utilize an additional through lane to increase capacity. In situations where the extra lane ends shortly beyond the intersection, a merge is required. During this research study, a prototype warning sign to improve the traffic flow and merge patterns was designed with input from a public-survey instrument, developed as a prototype, and is currently being evaluated at two intersections. These intersections, which previously contained the standard MUTCD lane ends sign, were monitored for six months via video cameras before the trial signs were installed in March 2003. The new signs are being monitored in the same manner. Contact Eric Feldblum at (860) 258-0392 or Eric.Feldblum@po.state.ct.us

Field Evaluation of Concrete Containing Disodium Tetrapropenyl Succinate (DSS)

Field-tests were initiated after several years of successful laboratory studies of a new corrosion inhibitor (DSS). The field test will make use of DSS additive in precast f-shaped highway barriers. The single-sided barriers are being fabricated and will be installed on I-84 in Southington. The trial concrete mixtures containing DSS have demonstrated they meet the requirements for slump, workability, air entrainment and compressive strength for class f concrete specified for highway barriers. Corrosion monitoring of the reinforcing steel within the barriers will be conducted through 2008. Contact Paul D'Attilio at (860) 258-0305 or Paul.Dattilio@po.state.ct.us

Use of Streaming Media for Research Dissemination and Training

This study evaluates streaming media production tools, plus server and client viewing software from RealNetworks, Microsoft and Apple. These technologies synchronize audio, video, text and graphics to captioned text, while conserving network bandwidth. Handicapped accessibility, as it pertains to streaming media, is addressed during all phases of the study. A Department-wide server provides an Intranet streaming media capability for in-house use. Streaming media will enhance ConnDOT's Internet web-site by providing better service to the public. An interim report will be available later this year. Contact Drew M. Coleman, at (860) 258-0310 or Drew.Coleman@po.state.ct.us

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

Connecticut was a stakeholder in the Strategic Highway Research Program (SHRP) and continues to support the LTPP experiments. A report is available that documents the SHRP efforts in Connecticut from 1987-2002. In conjunction with collecting the traffic data needed for LTPP, 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. Contact Anne-Marie H. McDonnell, P.E. at (860) 258-0308 or Annemarie.Mcdonnell@po.state.ct.us

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. Two projects are highlighted below.

Field Monitoring and Evaluation for Sign Support Structures Subject to Dynamic Loads

Recent changes in sign support specifications have resulted in an increase in design wind pressures. As a result, some of ConnDOT's overhead sign structures were being retrofitted, which involved adding stiffeners to the vertical truss chords. A recent study showed the use of a more rigorous stability analysis program could indicate that many existing sign trusses have sufficient strength to meet wind loading. The UConn study was undertaken to use new stability software to study existing sign supports, review alternative approaches for strengthening trusses, when needed, and revise the overall design approach and software used in ConnDOT. Contact John DeWolf at (860) 486-5023.

A Best Practices Guide for the Design of Context Sensitive Roadway Cross-sections

The product from this research will be a 'best practices' compendium for the design of cross-sections of streets, roads and highways. The comprehensive set of guidelines will provide design options that are safe, practical, and cost effective, but also context sensitive through consideration of appearance and community impact. Some of the issues addressed in the guidelines will be appropriate material selection and treatment of design details such that roadway is in harmony with existing natural or manmade context. The guide will also propose visualization tools for communicating with the public. Contact Norman Garrick at (860) 486-2990.

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

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Additional information including the Annual Summary of Activities is available at the following web address: **http://www.dot.state.ct.us/1103/index.html** or contact:

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