



# CONNECTICUT DEPARTMENT OF TRANSPORTATION

## CONNDOT RESEARCH HIGHLIGHTS - SPRING 2007



Actual Photolog Image - © 2007 Connecticut DOT

### NEW PHOTOLOG IMAGE & DATA TECHNOLOGIES

Department-wide usage and savings are up 50% since high-definition video cameras, a new underclearance measurement system and rapid field-to-user processing were implemented under this project. Find out more about Photolog at <http://www.ct.gov/dot/photolog>. Contact Brad Overturf of Connecticut DOT @ (860) 258-0319 or [bradley.overturf@po.state.ct.us](mailto:bradley.overturf@po.state.ct.us)

### CONNDOT PAVEMENT FRICTION TESTING PROGRAM ENHANCEMENTS

Pavement friction testing is performed for research, accident investigation and pavement planning purposes. Working with a state-of-the-art friction-testing vehicle, research is being performed to update speed gradient curves by pavement types; determine safe testing speeds for horizontal curves; evaluate potential use of the International Friction Index (IFI); and, implement use of laser-type texture measurements.

Contact John Henault of Connecticut DOT @ (860) 258-0352 or [john.henault@po.state.ct.us](mailto:john.henault@po.state.ct.us)



### Webcasts & Video-on-Demand



### ADVANCING THE USE OF STREAMING AND DIGITAL MEDIA TECHNOLOGIES AT CONNDOT

Webcasts and Video-on-Demand have enhanced communications within ConnDOT and the national transportation research community. Significant benefits are anticipated once existing capabilities are upgraded to the new U.S. high-definition video standard. A streaming video library can be perused @ <http://www.ct.gov/dot/video>.

Contact Drew M. Coleman of Connecticut DOT @ (860) 258-0310 or [drew.coleman@po.state.ct.us](mailto:drew.coleman@po.state.ct.us)

The Connecticut Department of Transportation maintains 3731 centerline miles of highway, 3891 highway bridges and administers an annual budget of over \$400 million.

### AN INVESTIGATION OF LOW-STRENGTH PORTLAND CEMENT CONCRETE TEST RESULTS UTILIZING CONCRETE TEMPERATURE LOGGERS

Concrete temperature loggers were embedded in cylindrical test specimens to help investigate why some cured concrete specimens did not attain required 28-day strengths. Study results indicated that specimens were not being properly cured, especially during hot weather, as curing temperatures far exceeded specification limits.

Contact John Henault of Connecticut DOT @ (860) 258-0352 or [john.henault@po.state.ct.us](mailto:john.henault@po.state.ct.us)



Connecticut DOT has ten engineering and technical personnel conducting in-house research activities.

### FEASIBILITY OF UTILIZING FUEL CELLS TO GENERATE POWER FOR THE NEW HAVEN RAIL LINE

ConnDOT has retained the services of the Connecticut Academy of Science and Engineering (CASE) to perform, in accordance with Connecticut Public Act No. 06-136, Section 19, the feasibility of using fuel cells for peak and emergency power for the New Haven Rail Line. This study is exploring requirements for traction power through the catenary system, signal and control power, station power; and yard power scenarios. The report is due to the Connecticut General Assembly by January 1, 2008.

Contact Richard Strauss of Connecticut Academy of Science & Engineering (CASE) @ (860) 527-2161 or [rstrauss@ctcase.org](mailto:rstrauss@ctcase.org)



VISIT [WWW.CT.GOV/DOT/RESEARCH](http://WWW.CT.GOV/DOT/RESEARCH) OR CALL (860) 258-0311 FOR MORE INFORMATION...



### LONG-TERM BRIDGE MONITORING

In this ten-year project to study the long-term behavior of in-service bridges, a variety of sensors, including accelerometers, tilt meters, temperature sensors and strain gages, collected data on six bridges. These data were used to form a "signature" for each bridge, then develop finite element models that both predict structural behavior and identify changes over time. The project has been completed and a final report entitled "Bridge Monitoring Network – Installation and Operation" is available online @ <http://www.ct.gov/dot/researchreports> .

Contact Paul D'Attilio of *Connecticut DOT* @ (860) 258-0305 or [paul.dattilio@po.state.ct.us](mailto:paul.dattilio@po.state.ct.us)



### LONG TERM PAVEMENT PERFORMANCE (FHWA-LTPP) MONITORING & WEIGH-IN-MOTION STUDIES

Connecticut participates in the Long Term Pavement Performance (LTPP) program and maintains five experimental test sites. In conjunction with collecting traffic data needed at these 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.



Contact Anne-Marie H. McDonnell, P.E. of *Connecticut DOT* @ (860) 258-0308 or [annemarie.mcdonnell@po.state.ct.us](mailto:annemarie.mcdonnell@po.state.ct.us)

### COMMERCIAL VEHICLE INFORMATION SYSTEMS & NETWORK (CVISN):

#### INTERNET-BASED VEHICLE ROUTING FOR OVERSIZE/OVERWEIGHT (OS/OW) VEHICLE PERMITS

As part of Connecticut's CVISN implementation, new features include:

- Internet-based vehicle routing that allows applicants to review potential routes before applying for a permit;
- Intranet-based Restriction Management to track highway activities that may reduce clearances or load ratings; and,
- Automated 24/7 permitting for certain vehicle/route combinations.

Contact Richard C. Hanley, P.E. of *Connecticut DOT* @ (860) 258-0374 or [richard.hanley@po.state.ct.us](mailto:richard.hanley@po.state.ct.us)



### CONNECTICUT COOPERATIVE HIGHWAY RESEARCH PROGRAM (CCHRP)

Connecticut statutes authorize UConn to perform research activities for ConnDOT under governance of a Joint Highway Research Advisory Council (JHRAC). JHRAC consists of four ConnDOT and four UConn members, and has performed over 160 research studies since its inception in the 1950's. Three new projects are presented here, and other CCHRP project reports are available free on-line @ [http://www.cti.uconn.edu/crp\\_completed.html](http://www.cti.uconn.edu/crp_completed.html) .

#### EXTENDING THE LIFESPAN OF EXISTING HIGHWAY BRIDGES THROUGH CONTROLLABLE STIFFNESS AND DAMPING DEVICES

This project will investigate state-of-the-art controllable stiffness and damping devices to reduce peak stresses in highway bridges; develop and validate structural health-monitoring techniques utilizing these devices; and, develop a design methodology for implementation.

Contact Dr. Richard Christenson of the *University of Connecticut* @ (860) 486-2270 or [Richard@engr.uconn.edu](mailto:Richard@engr.uconn.edu)

#### INCORPORATING WET PAVEMENT FRICTION INTO TRAFFIC SAFETY ANALYSIS

This study will conduct a statistical analysis of the association between wet pavement friction and road safety experience, controlling for pertinent roadway characteristics.

Contact Dr. John N. Ivan of the *University of Connecticut* @ (860) 486-0352 or [johnivan@engr.uconn.edu](mailto:johnivan@engr.uconn.edu)

#### CREATING USEFUL PRODUCTS FROM CONNECTICUT'S 2000 LIDAR DATA SET

This study will provide public access to Light Detection And Ranging (LIDAR) data and derived products via the Internet by creating web-accessible applications.

Contact Dr. Thomas H. Meyer of the *University of Connecticut* @ (860) 486-0145 or [Thomas.Meyer@uconn.edu](mailto:Thomas.Meyer@uconn.edu)

The first quad-gate rail crossing installation in the United States is located at the School Street & AMTRAK crossing in Groton, CT.

*Notes (or doodle)*



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The Merritt Parkway, which runs between Greenwich and Stratford in southwest Connecticut, in one of the few highways listed in the National Register of Historic Places.

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