



The RD&T newsletter

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MR. JOHN V. WALSH NAMED DEPUTY SECRETARY FOR ENGINEERING

Transportation Secretary H. B. Limehouse Jr. appointed Mr. John V. Walsh to serve as Deputy Secretary for Engineering effective April 19, 2010. Mr. Walsh replaces Mr. Tony L. Chapman who retired on April 18, 2010 after 34 years of service with SCDOT.

Mr. Walsh is a graduate of Clemson University and a registered professional engineer. He has been with the Department for over 21 years and has a strong background in planning and preconstruction. Mr. Walsh began his tenure with SCDOT as a Bridge Inspector in District 1. He then served the agency as a Project Engineer, a Project

Development Engineer, and as a Deputy State Highway Engineer. Mr. Walsh's position prior to being named Deputy Secretary for Engineering was Chief Engineer for Planning, Location, and Design. Mr. Walsh will assume the role of Chairman of the Research and Development Executive Committee (RDEC) that guides and directs the Department's SPR Research Program.



STUDY OF FLOOD MAGNITUDE AND FREQUENCY FOR URBAN BASINS INITIATED

As reported in the Winter 2010 edition of The RD&T Newsletter, U. S. Geological Survey (USGS) recently completed a research project for SCDOT updating regression equations to estimate the magnitude and frequency of floods in rural basins. Unlike past studies of this type conducted on a statewide basis for the State of interest, this was a regional effort that developed flood frequency techniques for rural basins that are more accurate and applicable across the borders for South Carolina, Georgia, and North Carolina.

In May 2010, SCDOT entered into a Joint Funding Agreement with the USGS Water Science Center in South Carolina for SPR 691, "Improving Techniques to Estimate the Magnitude and Frequency of Floods on Urban Streams in South Carolina." As with the study to update the rural flood frequency equations, SPR 691 will use a multi-state regional approach. This approach will provide a significant expansion of the database used in previous urban regression analysis studies. Specific objectives are:

1. update the magnitude and frequency of peak-flows at urban stations;

2. update basin characteristics for the urban stations using consistent geographical information system (GIS) methods;
3. update the regional urban flood frequency equations for the 50-, 20-, 10-, 4-, 2-, 1-, 0.5-, and 0.2-percent chance exceedance flows at ungaged sites.

The principal investigators (PIs) are Toby D. Feaster and Noel M. Hurley, Jr. Steering and Implementation Committee members include Wayne Corley, Chairman of the Committee, Preston Helms, and Bethany Ravan from SCDOT and Jeffery Belcher representing the FHWA.

The equations developed by the study will be used in the design of bridges, culverts, and embankments by SCDOT and can also be used for flood-plain management and flood insurance studies. In addition by updating the equations on a regional scale, engineers and water resource managers will have access to equations that are applicable across state boundaries. The scheduled completion date for the study is May 2, 2013.

RESEARCH ON SLAB CURLING BEING CONDUCTED IN-HOUSE

SPR 688, "Evaluating the Effects of Slab Curling on IRI for South Carolina Concrete Pavements" is being conducted in-house by a research team composed of personnel from SCDOT's Office of Materials and Research. Dr. Andy Johnson, the State Pavement Design Engineer, is the Principal Investigator for the study.

Concrete pavements are known to curl and warp due to a variety of factors including the development of a temperature gradient within the slab; this means the top of the slab is at a different temperature than the bottom of the slab. These temperature variations can be caused by daily weather variation or seasonal weather changes. Curling and warping can affect the rideability of a concrete pavement. SCDOT uses ride measurements based

on the International Roughness Index (IRI) as an acceptance criteria as well as determining the pay-factor for a project.

The objectives of this research are to evaluate the amount of slab curling that occurs on a typical South Carolina concrete pavement and the change in IRI due to changes in slab curvature. The study primarily focuses on slab curling as a result of daily temperature changes but also seeks to quantify seasonal curling.

This study was coordinated with two large concrete pavement projects in South Carolina, I-520 in Aiken County and I-385 in Laurens County. Both projects provided the opportunity to collect data on newly constructed pavement before opening to traffic. Data is being collected by three different means over a 24-hour period during each series of tests on a site. Dial gauges are used to measure small changes in height at multiple locations along a slab.

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Dial gauges used to measure elevation changes along a slab on I-385.



Terrestrial laser scanner on tripod behind the dial gauges.

report, with an SCDOT designation of SPR 664, can be accessed at www.clemson.edu/t3s/scdot/ in the completed projects section.

To date, initial tests were conducted at both sites and a follow-up test was conducted on the I-520 test section using the high-speed profiler during a different season to consider any seasonal effects. After completing all data collection, the results will be analyzed. Based on the findings of this research project, the procedure for measuring the rideability of concrete pavements will be reviewed and requirements adjusted as appropriate to account for temperature effects on slab curling.

SCDOT TO HOST A RESEARCH PEER EXCHANGE IN THE FALL OF 2010

State DOTs are required to hold research peer exchanges as a condition for approval of FHWA planning and research funds for RD&T activities. According to the definition given in 23CFR 420.203, “peer exchange means a periodic review of a State DOT’s RD&T program or portion thereof, by representatives of other state DOTs, for the purpose of exchange of information or best practices.” The host State DOT can also invite participants from other entities, such as FHWA, and other Federal,

State, regional or local transportation agencies, industry, etc., that are familiar with and support transportation research, development, or technology transfer activities. The purpose of the peer exchange is to share information and best practices that will aid all involved in improving their research management practices and programs.

SCDOT will host its fourth research peer exchange in the fall of 2010. The Transportation Technology Transfer (T3) Service at Clemson University will facilitate the event. The Research Unit is currently identifying participants and focus points for discussion at the exchange.



SCDOT CURRENT AND COMPLETED PROJECTS

For a complete list of current and/or completed research projects, please visit the Materials and Research web site located at www.clemson.edu/t3s/scdot. The current research projects page lists the project name, principal investigator, and the objective of the project. The completed research project page shows summaries of completed research projects and a number of them have pdf copies of final reports attached. The Research Problem Statement Form is also located on the website for your convenience.”