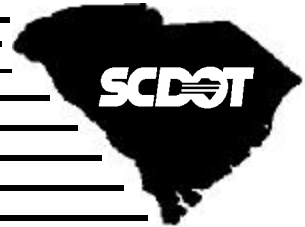


# The RD & T Newsletter

- Research —
- Development —
- Technology Transfer —



A Publication of the South Carolina Department of Transportation  
Research and Materials Laboratory

Milton O. Fletcher, P.E.  
Research and Materials Engineer

## SCDOT Sponsors Test Sections for NCAT Test Track

Construction of the National Center for Asphalt Technology (NCAT) Test Track has been completed and trucks are applying loads to the forty-six (46) test sections included in the 1.7 mile oval facility. The test track provides participants the opportunity to test their flexible pavements in a full-scale, accelerated manner where results do not require laboratory scale extrapolations or lifelong field observations. Those sponsoring test sections include Alabama, Florida, Georgia, Indiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee and the Federal Highway Administration.



*SCDOT Personnel Inspect One of the Department's Sections on the NCAT Test Track*

The Department's two (2) test sections, S-8 and S-11, were constructed utilizing South Carolina materials that were hauled to the test track for use in the mixes. Section S-8 has a 12.5 mm Superpave mix containing a polymer modified PG 76-22 and Section S-11 has a 9.5 mm Superpave mix also with a polymer modified PG 76-22, both over a 19 mm mix containing a PG 67-22.

*(Continued on Page 2)*

**SCDOT Sponsors Test Sections for  
NCAT Test Track .....1**

**Travel Assistance Available For  
International Highway  
Technology Meetings .....2**

**Clemson University Completes Study  
On The Use of Waste Shingles  
in Asphalt Mixtures .....3**

(Test Track -- Continues from Page 1)

Trucks began running on the track on September 19, 2000. The trucks operate six (6) days a week with each Monday used to conduct performance measurements on the test sections and for maintenance operations on the trucks. Weekly measurements made by NCAT personnel include rut depths, smoothness, density, random transverse profiles, etc. In addition, the Alabama DOT conducts FWD, friction, and laser profiling on a monthly basis to complement the data collected weekly. According to NCAT, 2,620,312 ESAL's had been applied as of 11:00 pm on June 4, 2001. This represents approximately 26% of the two-year goal of 10,000,000 total ESAL's.

On a tour of the track in May 2001, it was obvious that great care had been exercised in placing the different mixes in the test sections. The individual mixes were uniform and the track was very smooth especially considering that there was a joint every 200 feet, the length of a test section. At that time, the Department's two (2) sections were performing well as were most of the others. This effort should provide valuable information that will aid states in improving the performance of their asphalt mixes.

Additional information on the test track can be obtained on the Web at [www.pavetrack.com](http://www.pavetrack.com).



## Travel Assistance Available For International Highway Technology Meetings

The Director of the National Cooperative Highway Research Program (NCHRP) recently announced that funding is now available to provide assistance for employees of AASHTO member departments to participate in conferences, workshops, and seminars outside the United States. The travel assistance program is sponsored under NCHRP Project 20-36: *Highway Research and Technology – International Information Sharing*. The purpose of Project 20-36 is to develop and promote a more coordinated and systematic approach to international information exchange and technology sharing by AASHTO, FHWA, and other major users and producers of highway R&D.

To be eligible for assistance, an individual must participate in the meeting as a presenter, discussion leader, panelist, or moderator. Qualifying meetings are those held outside the United States by a recognized public/industry association or professional organization that has highway transportation as a major part of its mission, typically an international conference, congress or seminar. Requests for assistance should be submitted and received at least 90 days in advance of the planned event; they are reviewed as they are received. Funding is limited and financing is available for about ten requests per year. If you would like further information about this program, please contact Terry Swygert at (803) 737-6652, Research and Materials Laboratory, 1406 Shop Road, Columbia, South Carolina 29201.

## Clemson University Completes Study On The Use of Waste Shingles in Asphalt Mixtures

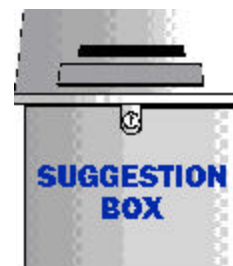


In the United States, approximately ninety million asphalt roofing shingle squares, weighing in excess of ten million tons, are manufactured each year. Two thirds of the shingles are used for re-roofing houses and the other third is used on new houses. For the houses that are re-roofed, the old shingles are usually removed, and in most cases, dumped in landfills. It has been estimated that asphalt shingles represent the third largest source of construction waste landfilled after wood and wallboard. Because shingles take many years to break down, they are not considered a suitable material for landfills. However, shingles contain some of the same materials as hot mix asphalt. These materials include asphalt cement, fine aggregate, and fiber. In many ways, asphalt shingles closely resemble reclaimed asphalt pavement (RAP). Furthermore, because of the relatively high asphalt content of shingles, using waste shingles in hot mix asphalt may reduce the amount of virgin asphalt binder required.

It is for these reasons that South Carolina Department of Transportation decided to place a test section utilizing the waste material. Dr. Serji Amirkhanian of Clemson University was the Principal Investigator on a research study to develop the mix design and

specifications, monitor placement, and assess initial results. A surface course containing 8% waste shingles by weight of aggregate was placed on a one mile section of a secondary road in Pickens County.

The shingles were introduced into the asphalt mix using the existing RAP system. No modifications were made to either the asphalt plant or lay down equipment used to place the mix containing shingles. Relatively few problems were encountered during the production and placement process. Subsequent testing of cores taken from the test section indicated that all mix properties were satisfactory. Rideability (smoothness) results, although within specifications, were somewhat higher for the test section than for the control section. Additional research was recommended to evaluate the use of shingles in hot mix asphalt using different design procedures, materials, and paving scenarios.



**If you have any suggestions for improving our newsletter or know of any topics that should be included, please contact Mr. Mike Sanders at (803) 737-6691. You may also send it to the RD & T Newsletter, SCDOT, Research and Materials Laboratory, P.O. Box 191, Columbia, SC 29202.**



***Research Projects Started Between January 1, 2001 and June 30, 2001***

SPR No. 616, “Development of a Quality Assurance Program for Asphalt Paving Mixtures in South Carolina – Phase II”

*Principal Investigator: Dr. James L. Burati, Jr., Clemson University*

SPR No. 621, “Seismic Hazard Mapping for Bridge and Highway Design in South Carolina”

*Principal Investigator: Dr. Pradeep Talwani, University of South Carolina*

SPR No. 622, “Funding Options for Meeting Transportation Infrastructure Needs in the State of South Carolina”

*Principal Investigator: Dr. James B. London, Clemson University*

SPR No. 623, “Estimating the Dynamic Properties of SC Soils for Ground Response Analysis”

*Principal Investigator: Dr. Ronald D. Andrus, Clemson University*

SPR No. 624, “Establishment of Foundations Inspector’s & Earthwork & Base Course Inspector’s Certification Courses”

*Principal Investigator: Dr. Serji N. Amirkhanian, Clemson University*

SPR No. 625, “Specifications for Culvert Pipe used in SCDOT Highway Applications”

*Principal Investigator: Dr. S. L. Gassman, University of South Carolina*

SPR No. 626, “Laboratory and Field Investigation of Temperature Differential in HMA Mixtures Using an Infrared Camera”

*Principal Investigator: Dr. Serji N. Amirkhanian, Clemson University*

SPR No. 627, “Highway Capacity in Work Zones”

*Principal Investigator: Dr. Wayne A. Sarasua, Clemson University*

SPR No. 628, “Development of Scheduling Templates for Preconstruction Activities”

*Principal Investigator: Dr. Lansford C. Bell, Clemson University*



***Research Projects Completed Between January 1, 2001 and June 30, 2001***

SPR No. 579, "Continuing Investigation of Strand Slippage in Prestressed Concrete Piles - Phase II"  
*Principal Investigator: Dr. Michael F. Petrou, University of South Carolina*

SPR No. 583, "Development of a Quality Assurance Program for Portland Cement Concrete in SC"  
*Principal Investigator: Dr. Robert Rasmussen, Transtec Consultants*

SPR No. 586, "Field Evaluation of Use of Waste Shingles in Asphalt Mixtures"  
*Principal Investigator: Dr. Serji N. Amirkhanian, Clemson University*

SPR No. 588, "Load Testing for Assessment and Rating of Highway Bridges"  
*Principal Investigator: Dr. Scott D. Schiff, Clemson University*

SPR No. 596, "Development of a Process to Forecast Construction Staffing Levels"  
*Principal Investigator: Dr. Lansford C. Bell, Clemson University*

SPR No. 602, "Feasibility of Including Structural Adequacy as an Indicator of Overall Pavement Quality in the SCDOT Pavement Management System"  
*Principal Investigator: Dr. Ronald L. Baus, University of South Carolina*

SPR No. 606, "Investigation into Improvement of Bridge Approaches in South Carolina"  
*Principal Investigator: Dr. Charles E. Pierce, University of South Carolina*

SPR No. 620, "Assessment of Public Opinion of the South Carolina Department of Transportation"  
*Principal Investigator: Dr. Sandra J. Teel, University of South Carolina*

If you would like a copy of the final report for any of these projects, please contact:

Mike Sanders, P.E., Research Engineer  
P.O. Box 191  
Columbia, SC 29202  
(803) 737-6691, fax: (803) 737-6649  
e-mail: sandersmr@dot.state.sc.us

Upcoming Meeting ....

## **AASHTO Region II Research Advisory Committee Meeting**



**Hotel Roanoke  
Roanoke, Virginia  
July 10 - 13, 2001**



**RD & T Newsletter  
South Carolina Department of Transportation  
Research and Materials Laboratory  
P.O. Box 191  
Columbia, SC 29202**