

Period Covered: July 1, 2008 through September 30, 2008 (Quarterly Report)

ALDOT Progress Report for the
State Planning and Research Program

PROJECT TITLE: Accelerated Performance Testing on the 2006 NCAT Pavement Test Track		
PROJECT MANAGER(S): R. Buzz Powell, PhD, PE Ph #: (334) 844-6857	SPR Project No: TPF-5(124) ALDOT Research Project No. 930-637P	Project is: <input type="checkbox"/> PLANNING <input checked="" type="checkbox"/> RESEARCH & DEVELOPMENT
Annual Budget	Multi Year Project Total Budget for Project: \$9,412,225.00 Total Cost to Date for Project: \$7,378,023.32	

Background

The Pavement Test Track is a full-scale accelerated performance test (APT) facility managed by the National Center for Asphalt Technology (NCAT) at Auburn University. The project is funded and directed by a multi-state research cooperative program in which the construction, trafficking, and pavement evaluation are carried out on 46 different 200-foot test sections around the 1.7-mile oval test track. Each test section is constructed utilizing the asphalt materials and design methods used by individual sponsors. A fleet of heavy trucks is operated on the track in a highly controlled manner in order to apply a design life-time of truck traffic (10 million equivalent single axle loads, or ESALs) in two years. The current project represents the third three-year research cycle of the NCAT Pavement Test Track.

Objectives

The primary objectives of the project are to: (1) identify pavement structures and materials with superior field performance and lower life cycle costs; and (2) provide information for the calibration and validation of the Mechanistic-Empirical Pavement Design Guide (MEPDG).

Design and Construction of Test Sections

When each research cycle is completed, test sections are either left in place for the application of additional traffic or rebuilt in the manner that best meets the needs of sponsors. The third research cycle includes: (1) eight sections built in 2000 (all mix performance sections), 16 sections built in 2003 (12 mix performance sections and four structural sections) and 22 sections built in 2006 (15 mix performance sections and seven structural sections). Mix performance sections are perpetual pavements in which distresses are confined to various combinations of experimental surface mixes. Structural sections are typically thinner, highly instrumented pavements that are intended to provide information for the MEPDG.

Trucking Operations

Trucking operations for the third phase of the NCAT Pavement Test Track began after the completion of the reconstruction activities in November of 2006. A fleet of five trucks runs two shifts a day. An AM driver shift runs from 5:00 AM until approximately 2:00 PM, and a PM driver shift runs from 2:00 PM until approximately 11:00 PM.

At the end of the reporting period, a total of 9,116,392 ESALs (91 percent of the 10 million ESAL goal) had been safely applied to the surface of the 2006 NCAT Pavement Test Track. This means that the eight sections originally placed in 2000 had been subjected to approximately 29 million ESALs and the sixteen sections built in 2003 had been subjected to approximately 19 million ESALs. All mixes in both previous studies were designed for 10 million ESALs.

Laboratory Performance Testing

There are 31 unique asphalt mixtures that consist of 27 Superpave and Stone Matrix Asphalt (SMA) mixtures as well as four Permeable European Mix (PEM) and Open Graded Friction Course (OGFC) mixtures. The laboratory testing plan focuses on evaluation of the 27 Superpave and SMA mixtures. NCAT has finished testing of binder, dynamic modulus, flow number and rutting susceptibility using the Asphalt Pavement Analyzer (APA). A report that summarizes the laboratory testing results is being prepared. This report will be completed by the end of the next quarter.

Structural Pavement Study

Dynamic data collection has continued on a weekly basis. Each week, three passes of each truck in each test section are captured. The data are then processed and added to their respective databases.

While data collection and processing is currently ongoing, two reports have been developed and are under review by the structural study sponsors or NCAT steering committee. The first, under review by the steering committee, "Design, Construction and Instrumentation of the 2006 Test Track Structural Study," will serve as a reference document for future structural study reports that will be published. The second report, under review by the sponsors, "Mechanistic Characterization of Resilient Moduli for Unbound Pavement Layer Materials," documents both the laboratory and field FWD testing conducted on the granular base and subgrade materials in the 2006 Test Track structural test sections (N1 - N10 and S11). A key component of both lab and field investigations was to evaluate the stress-sensitivity of the unbound materials. Both reports should be publicly available by the end of December, 2008.

Pavement Performance Evaluation

Every Monday, trucking is suspended so that vehicle maintenance can be performed and pavement performance can be quantified. An inertial profiler equipped with a full lane width dual scanning laser "rutbar" is run weekly around the entire track in order to determine individual wheelpath roughness, right wheelpath macrotexture and individual wheelpath rutting for every experimental section. Additionally, three random locations were selected within each section in a stratified manner to serve as the fixed test location for nondestructive wheelpath densities. Transverse profiles are measured along these same locations regularly so that rutting may be calibrated with a contact method. Figures 1 and 2 illustrate rutting performance and International Roughness Index (IRI) of test sections at the NCAT Pavement Test Track at the end of reporting period.

Rutting Performance

Cycle of Construction Shown by Color (Black=2000, Blue=2003, Red=2006), N1-N10 & S11 Structural (M-E)

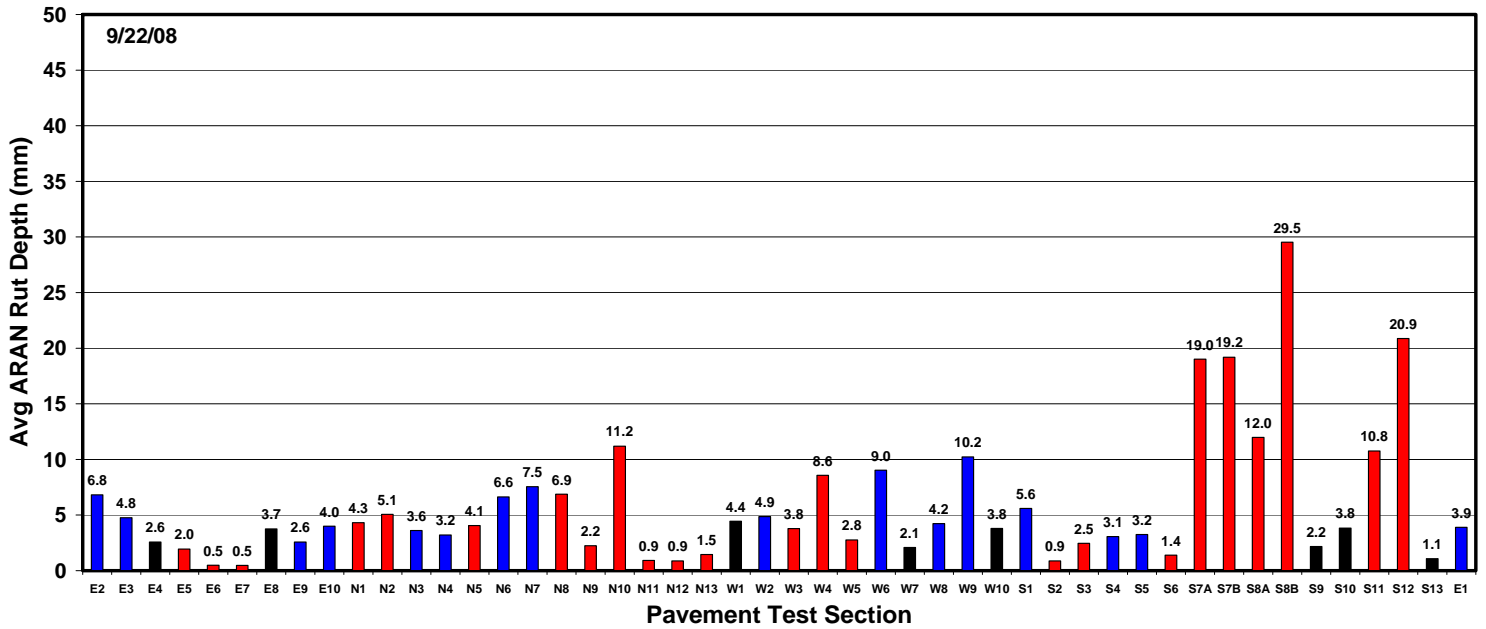


Figure 1 Rutting Performance of Test Sections at the End of Reporting Period

Roughness Performance

Cycle of Construction Shown by Color (Black=2000, Blue=2003, Red=2006), N1-N10 & S11 Structural (M-E)

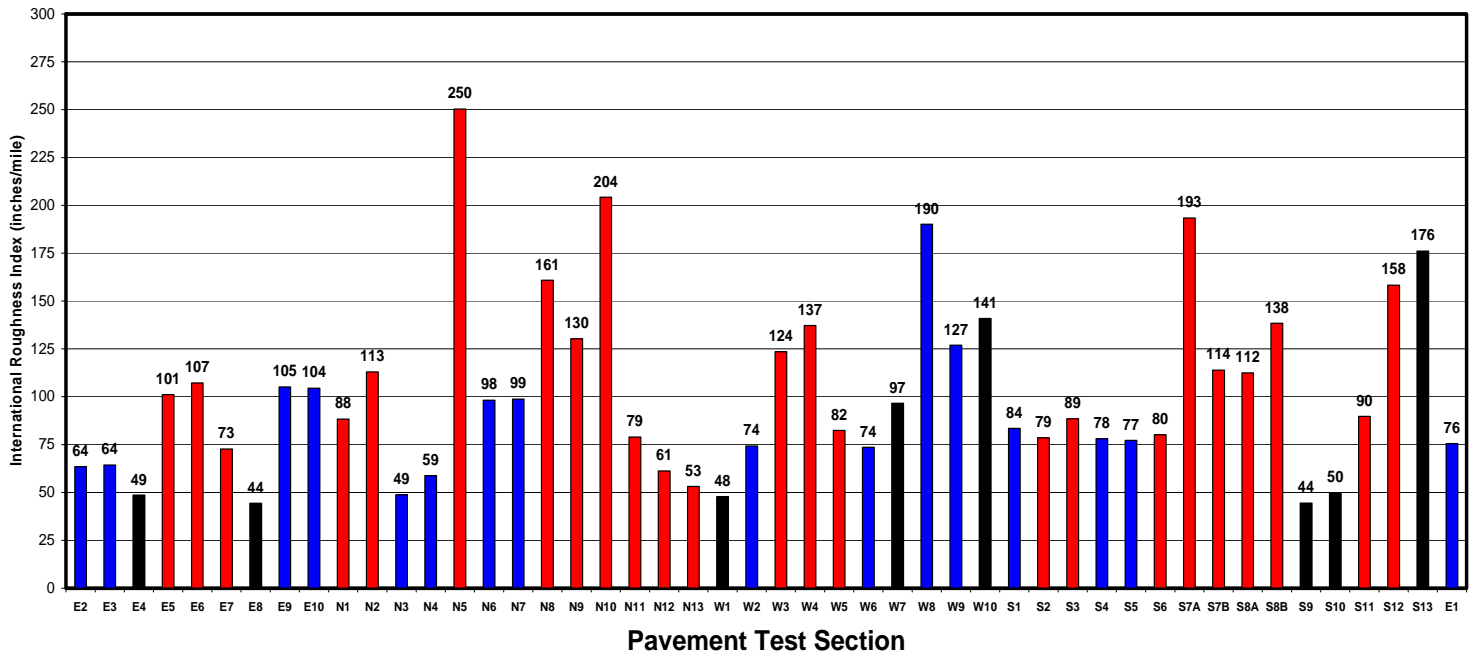


Figure 2 IRI of Test Sections at the End of Reporting Period

STATUS AND COMPLETION DATE

Percentage of work completed to date for total project 84.3 %

Project is:
X on schedule _____ behind schedule, explain:

Expected Completion Date: August 31, 2009

Please note that this project has continued with renewed requests for services and additional funding obligations and may be extended beyond the current Expected Completion Date listed above.