

FACT SHEET



RESEARCH PROJECT TITLE

Comparative Evaluation of Subgrade Resilient Modulus from Non-destructive, In-situ, and Laboratory Methods

PRINCIPAL INVESTIGATOR

Kevin Gaspard, P.E.
Pavement Research Engineer
Manager
(225) 767-9104

LTRC CONTACT

Zhongjie "Doc" Zhang,
Ph.D., P.E.
Pavement & Geotechnical
Administrator
225-767-9162

STUDY TIMELINE

July 2003 July 2006

TYPE OF REPORT

Final Report 417
LTRC Project No. 03-3P

FUNDING SOURCE

FHWA: SPR

MORE INFORMATION

www.ltrc.lsu.edu

Louisiana Transportation
Research Center
4101 Gourrier Ave
Baton Rouge, LA 70808-4443

Since its creation by the legislature in 1986, LTRC has grown to national prominence through its efforts to improve transportation systems in Louisiana. The center conducts short-term and long-term research and provides technology assistance, engineering training and continuing education, technology transfer, and problem-solving services to DOTD and others in the transportation community. The center is largely supported by funding authorized by the Federal Highway Administration.

DOTD Implements Soil Measuring Device to Increase Life of Pavements

February 2012

WHAT WAS THE PROBLEM?

The resilient modulus (M_r) of pavement materials and subgrades is an important input parameter for the design of pavement structures. Highway agencies tried to seek different surrogates. Various empirical correlations have been used to predict M_r in the last three decades. DOTD was using regional values for its input of subgrade support.

WHAT WAS DONE?

New technologies provide the opportunity to either extend the service life of roads or ensure that it is met. LTRC conducted three extensive research projects in which the dynamic cone penetrometer (DCP) was evaluated. Capable of gathering information quickly and accurately, the DCP proved to be a valuable tool in enhancing the pavement design process, thus allowing better management of transportation funds.



The LTRC implementation team revised an existing DOTD Engineering Directives and Standard Memorandum, more commonly known as EDSM. LTRC received approval for their revision from DOTD's chief engineer in June 2009, enacting a new policy for all districts across the state to use the DCP in their subgrade soil surveys.

Additional implementation items included developing an official DOTD DCP testing procedure, DCP training certification, training video, and DCP data analysis software. Statewide training sessions were conducted. Currently, the DCP is being utilized statewide in the pavement design process.

WHY SHOULD YOU DO IT?

Transportation asset management is crucial. Utilizing new technologies to improve design and analysis processes ensure that assets are extended to their fullest. The DCP is a low-cost assessment tool capable of assisting engineers to conduct enhanced pavement designs.

WHAT ARE POTENTIAL FISCAL IMPACTS?

The savings on one project was determined to be approximately \$350,000 annually, based on life-cycle analysis. Also, for a relatively small investment, pavement designs can be enhanced. Enhancement can be in two areas. Overdesigning pavements translates into higher initial costs and in some instances does not increase its service life. Underdesigning pavements can lead to service life reduction requiring unplanned rehabilitation. More accurate designs translates into better asset management.