

FACT SHEET



RESEARCH PROJECT TITLE

Implementation of New OGFC Specifications

PRINCIPAL INVESTIGATOR

William "Bill" King, Jr., P.E.
Materials Research Administrator
(225) 767-9129

LTRC CONTACTS

William "Bill" King, Jr., P.E.
Materials Research Administrator
(225) 767-9129

Md Sharear Kabir, E.I.
Asphalt Research Engineer
(225) 767-9138

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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.

Aggregate Mixture Found to Increase Safety on Roads

November 2011

WHAT WAS THE PROBLEM?

Constructing a safe and durable highway system in Louisiana has long been a major concern for highway engineers. Open-graded friction course (OGFC) mixtures have shown to improve wet weather visibility, which can be a leading factor in causing wet weather accidents. The Louisiana Department of Transportation and Development (DOTD) began the development of OGFC mixtures in the late 1960s and early 1970s. However, in 1984, a moratorium was imposed on the use of OGFC mixtures due to some early failure issues.

WHAT WAS DONE?

Significant improvements have been noticed in OGFC mixture performance and service life since a new-generation of OGFC mixture was promoted in the U.S. in the late 1990s. Inspired by the success of other state agencies, DOTD modified the earlier mix design and constructed four new OGFC sections to evaluate pavement performance and safety benefits. New design techniques include using polymer-modified mixtures along with significant improvements in construction techniques.

A comprehensive evaluation of Louisiana OGFC mixtures on the basis of their laboratory and field performance was conducted as part of this research. Laboratory work entailed material and mixture design in addition to performing numerous laboratory tests, namely permeability, draindown, tensile strength ratio (TSR), and loaded wheel tests (LWT). Field evaluation involved visual inspection, pavement condition survey, skid resistance, and traffic safety.

WHY SHOULD YOU DO IT?

It is anticipated that this performance evaluation will support the ongoing use of OGFC mixtures in the state of Louisiana. Additionally, it provides an opportunity to continually improve the current OGFC specification and mix design procedures adopted by DOTD.

Researchers found that the high air void content coupled with large permeability enhance the effective lateral drainage of rain water to the edge of the pavement. In general, the OGFC pavement reduces hydroplaning, splash and spray, improves roadway visibility under wet weather, and improves the skid resistance of pavement surface through macro and micro texture and effective runoff of rain water. Additional benefits of OGFC mixtures are improved smoothness and a reduction in pavement tire noise.

WHAT ARE THE POTENTIAL IMPACTS?

Friction values of OGFC pavements have shown to be superior over their Superpave counterparts due to very good macro-texture. As a result, accident data analyses show a significant reduction in accidents when OGFC mixtures are used. As much as an 80 percent reduction in wet weather accidents and a 100 percent reduction of fatalities was reported.

With very few exceptions in the laboratory, the selected OGFC mixtures showed the potential to meet current DOTD specifications as well as various performance standards established by previous studies. Based upon the experience obtained from the laboratory and field phases of this study, it can be concluded that Louisiana OGFC mixtures are capable of delivering impressive performance. The material and mixture design guidelines provided in latest version of DOTD specifications for OGFC seem to work very well with reasonable permeability, draindown, LWT, and TSR tests.

Convinced by the overall performance, DOTD has promoted the use OGFCs on the Interstate highway system. Currently, more than 120 lane miles are under contract for OGFC mixture paving.

