

Evaluation of Louisiana's Maintenance Chip Seal and Microsurfacing Program

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Problem

Effective maintenance administration involves several steps: planning work based on need, budgeting the work within resource constraints, selecting and executing work to meet environmental and traffic constraints, and monitoring expenditures and achievements. However, most of these steps are carried out based on historical records, and these records reflect practices rather than need.

The effectiveness of these practices has never been adequately evaluated because present systems are not able to objectively define how well a maintenance treatment,

be it surface repair (patching, crack sealing), surface seals (chip seal, slurry seal, fog seal, etc.), or surface rehabilitation, has improved conditions or slowed the deterioration of roadway elements.

It is because of this lack of adequate information on which to base judgment for selection of specific preventive maintenance strategy that maintenance managers have had difficulty in justifying funding for maintenance in general and preventive surface maintenance in particular.



River Road in Baton Rouge is one of the sites where chip application is being evaluated.



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Objectives

The major objective of this research is to evaluate the effectiveness of the Louisiana Department of Transportation and Development's (DOTD) chip seal and microsurfacing program for equitable allocation (and justification) of funds for its overall preventive maintenance program. Specifically, this research seeks to

- 1.) Identify projects that have received preventive maintenance, in the form of chip seal and microsurfacing, over three fiscal years (presumably 1993-96) and determine the age and pretreatment condition data of the associated pavement sections (cross section);
- 2.) Define critical performance parameters to evaluate those projects;
- 3.) Develop a database and experimental plan to evaluate the effectiveness of the preventive treatments; and
- 4.) Evaluate the effectiveness of the preventive maintenance treatments from a performance and cost perspective.

Description

The study will collect and analyze data over a three-year period and be limited to projects that have received preventive maintenance treatments in the form of chip seals and microsurfacing during three fiscal years (1993-94, 1994-95, 1995-96).

Projects in the 1996-97 program may be added to the study if these projects can provide enough data points for evaluation.

The old colloquial saying of "pay me now, or pay me more later" applies appropriately to the life of pavements and road surfaces. Lack of hard data has prevented maintenance administrators from using (and justifying) preventive maintenance strategies.

This research will help to improve DOTD's ability to administer maintenance funds for pavements by establishing a set of performance curves for chip seal and microsurfacing.

Once established, guidelines developed through this research can be applied to timely maintenance strategies and result in extended pavement life at a reasonable cost—providing management with better ways to plan, budget, and program pavement maintenance expenditures in an equitable manner.

Implementation Potential

A PC-based system will be delivered to DOTD personnel to calculate and determine the most cost-effective preventive maintenance strategy and identify the most appropriate timing of chip seal and microsurfacing.

The software will incorporate the pavement performance models, pavement maintenance cost models, and life-cycle cost model. The software will also be an interactive program that allows for flexibility in investigating different strategies of preventive maintenance.

A user manual on the use of the system will be part of the implementation package.