



RESEARCH PROJECT CAPSULE [16-5P]

July 2016

TECHNOLOGY TRANSFER PROGRAM

Pavement Service Life Extension Due to Asphalt Surface Treatment Interlayer

JUST THE FACTS:

Start Date:

July 1, 2016

Duration:

24 months

End Date:

June 30, 2018

Funding:

TT-Fed/TT-Reg

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Sponsored jointly by the Louisiana
Department of Transportation and
Development and Louisiana State
University

POINTS OF INTEREST:

Problem Addressed / Objective of
Research / Methodology Used
Implementation Potential

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PROBLEM

The Louisiana Department of Transportation and Development (DOTD) has been using asphalt surface treatment (AST) interlayers over soil cement base courses as a means to mitigate shrinkage cracks from reflecting through the asphaltic concrete (AC) pavement surfaces. There are currently no official DOTD guidelines or policies for using AST interlayers. Determination of the cost effectiveness for using AST interlayers in pavements has not been performed for Louisiana roadways.

OBJECTIVE

The main objectives of this study are to evaluate DOTD's current AST interlayer practice; determine the effectiveness of AST interlayers in terms of costs and benefits; develop statistical performance prediction models for various pavement distress types (with and without AST interlayers); and develop guidelines/policies for the use of AST interlayers.

METHODOLOGY

After conducting an extensive literature review regarding the use of AST interlayers to retard reflective cracking, the state-of-practice among various transportation agencies (including each DOTD district) will be reviewed and summarized.

Based on communication with the DOTD districts, lists of pavement projects with and without AST interlayers will be assembled for detailed study. Project information from the districts will be supplemented with data that is available from the DOTD mainframe computer, including pavement inventory data, construction/maintenance history, financial records, material types, pavement layer thicknesses, roadway geometry, traffic volumes, and structural/functional distress parameters used to quantify pavement performance.

The remaining service life (RSL) of a pavement section is defined as the estimated/predicted years of service from any given date (usually from the last distress survey date) to the time when the pavement section is expected to accumulate distresses equal to a threshold value. For a newly constructed or rehabilitated pavement section, the RSL is equal to its design life. The service life extension (SLE) due to the AST interlayer is simply the difference between the RSL of a pavement section with an AST interlayer and the RSL of the pavement section without an AST interlayer.

For each selected pavement project, with or without an AST interlayer, pavement distress data will be analyzed to determine performance relative to the distress type. Various mathematical models will be used to statistically simulate the measured data and predict performance. Using the accumulated data, performance predictions may be compared. Life-cycle cost analyses will be conducted for each project, and guidelines for cost-effective utilization of AST interlayers will be developed.

IMPLEMENTATION POTENTIAL

DOTD's ability to preserve and manage pavements and facilitate a cost-effective selection of projects for AST interlayers will be enhanced. Study findings will be based on systematic research and actual performance data. New models for evaluating AST interlayer performance and guidelines for the selection and application of AST interlayers will be provided.

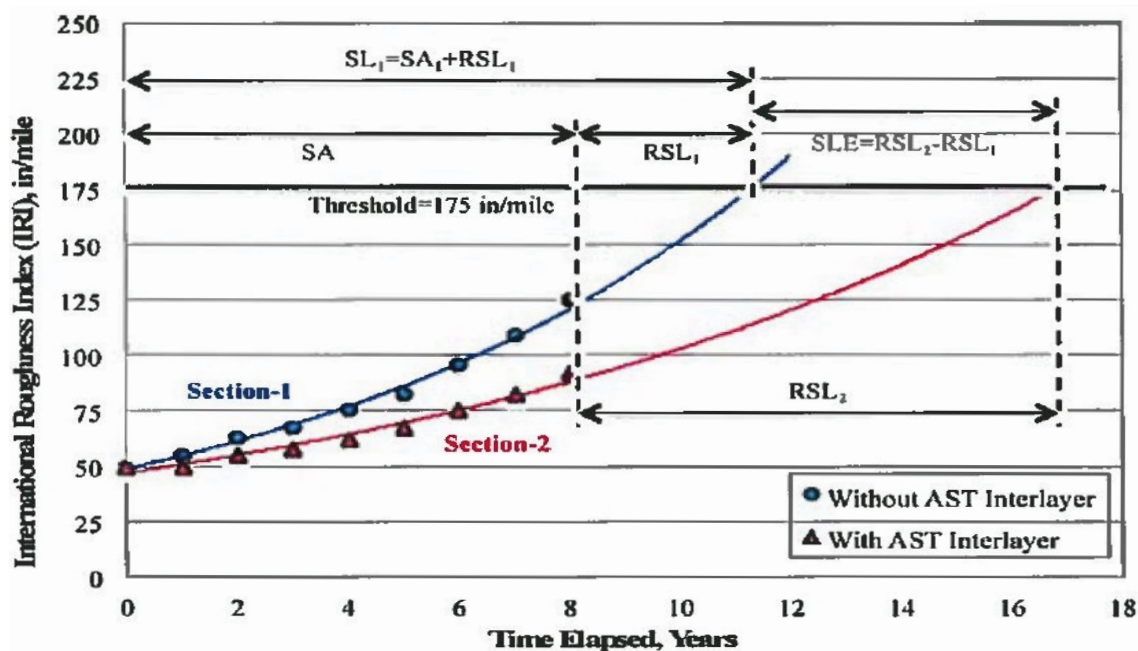


Illustration of service life (SL), remaining service life (RSL), and service life extension (SLE) of pavement sections with and without AST interlayer treatment.