

FACULTY AFFILIATE RESEARCH

DECISION MATRIX FOR THIN MAINTENANCE SURFACES

Several faculty at Iowa State University conduct research projects under CTRE's umbrella research agreement with the Iowa Department of Transportation. Like the research described here led by Charles T. Jahren, assistant professor of construction engineering, many of these projects result in immediate practical applications for the Iowa DOT's highway maintenance operations.

Project partner: Iowa Department of Transportation

Thin maintenance surfaces (TMS) can be cost effective treatments for maintaining the quality of pavements. TMS—including chip seals, slurry seals, and micro-surfacing—are usually applied to flexible pavements. Fog seals, crack repairs, and hot mix overlays are maintenance treatments that may affect the use of thin maintenance surfaces.

TMS are cost effective only when the right projects and treatments are selected and the timing is right. In most cases, the proper time is before the need is apparent to casual observers. Once pavements start to deteriorate, they deteriorate rapidly beyond the point where TMS is effective.

When TMS applications are properly timed, however, road networks show improvements in service life over the long term.

Because of their potential cost effectiveness, the Iowa Department of Transportation is planning to substantially increase its use of TMS. Charles Jahren, assistant professor of construction engineering at Iowa State University, is leading a project to develop a system for planning TMS maintenance programs tailored to Iowa's climate, materials, and contracting practices. The study will develop recommendations, guide specifications, and construction procedures regarding which surface treatments to use and when to use them to maximize cost effectiveness and maintain acceptable pavement conditions.

A primary product of the study will be a matrix of recommendations regarding particular TMS for specific traffic volumes, pavement conditions, and locally available materials. The study will also provide improved pavement assessment techniques with objective measures for identifying TMS candidates.

Jahren's team is also assisting with the design and monitoring of test sections of TMS throughout Iowa. One set of test sections to be constructed in summer 1998 on U.S. 69 will include micro-surfacing and chip seals. The chip seals will compare local and imported aggregate, one and two courses, and high float and cationic emulsion (binder). After construction the researchers will monitor performance.

The research team will issue a set of preliminary guidelines by December 1998. **end**