

## Performance of Hot-Mix Asphalt Overlays in Illinois



**Illinois Department  
of Transportation**

The Illinois Department of Transportation (IDOT) has conducted several studies on the performance of hot-mix asphalt (HMA) overlays, with the most recent evaluation conducted in 2002. However, since that time, several changes in IDOT practices, policies, and procedures have sparked the need to reassess the performance of these HMA overlays. Two changes in particular—the full adoption of SUPERPAVE for all state highway mix designs and the use of material transfer devices (MTD) for new interstate pavement construction—are believed to have had significant effects on HMA overlay performance.

The Illinois Center for Transportation (ICT) contracted with Applied Pavement Technology, Inc. (APTech) to conduct this study to evaluate the overall performance of overlaid pavement sections on two subsets of the pavement network interstate and off-interstate marked routes. The service life of the overlays is affected by a variety of factors that were examined in this study. Specifically, the following attributes were examined using data mined from the Illinois Roadway Information System (IRIS) construction year period, location, condition before overlay placement, presence of D-cracking on rigid pavement sections before overlay, underlying concrete type, estimated overlay number, and overlay type.

The data compilation portion of the project, which included extensive use of Microsoft® Access, Excel, and Visual Basic coding, was a significant endeavor. Prior to the initiation of this study, it was unknown whether adequate data would exist or could be compiled to provide enough information for the analysis of the HMA overlay performance. APTech worked with IDOT officials to successfully prepare an analysis database that was used in a detailed evaluation of overlay performance.

In addition, both SMART (Surface Maintenance at the Right Time) overlays and standard policy overlays were evaluated for periods between 1975 to 1980, 1981 and 1987, 1988 to 2000, and 2001 to present. Based upon the service life results, the impact of the evaluated variables on the performance of the HMA overlays was documented in the final report. The database of information developed as part of the study contains a wealth of information that can be used to further analyze the effects of various attributes on the performance of HMA overlays.