



U.S. Department of Transportation
Federal Highway Administration

IMPROVED
CONSTRUCTION
new strategies to enhance the quality
MAINTENANCE
AND
performance of highway operations
OPERATIONS

Optimizing Highway Performance: Pavement Preservation

A 1997 report to Congress warned that more than 48 percent of the Nation's rural Interstate highways and nearly 60 percent of urban Interstate highways have pavements rated fair to poor. And yet the demands on our highway network are greater than ever.

To meet the growing travel demand and the public's expectations for safety, ride quality, and traffic flow, highway agencies are redefining their objectives to focus on activities and strategies to preserve and maintain existing highway systems, instead of the typical strategy of fixing the worst first. Doing that without busting budgetary limits requires a change of philosophy from reactive maintenance to preventive maintenance. Increasingly, State departments of transportation (DOTs) report that the proactive approach of preventive maintenance—known as pavement preservation—cuts the need for costly, time-consuming rehabilitation and reconstruction projects and reduces associated traffic disruptions. As a result, the public is seeing improved mobility, reduced congestion, and safer, smoother, longer-lasting pavements—the goals of pavement preservation.

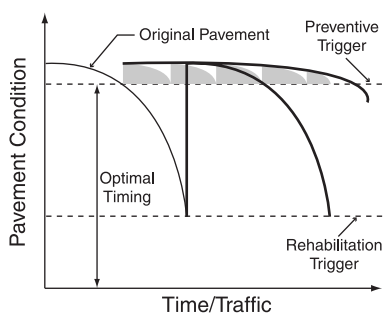
To advance these goals, the Federal Highway Administration (FHWA) is partnering with DOTs, industry organizations, and other stakeholders. Their objective is to spread the word that a variety of innovative techniques and strategies can preserve not only pavements, but also the Nation's investment in the highway infrastructure.

THE CONCEPT BEHIND PAVEMENT PRESERVATION

Traditionally, highway agencies have allowed the ride quality and structural condition of a pavement to deteriorate to fair to poor condition before taking steps to rehabilitate the pavement. The aim of the rehabilitation is to repair structural damage and restore pavement conditions—a costly, time-consuming activity. This “worst-first” scenario came about for many reasons, including the requirements of Federal-aid funding and maximization of capital growth. But now, by applying a series of low-cost preventive maintenance treatments, each of which lasts a few years, highway agencies can extend the pavement's service life. This translates into a better investment and a better ride quality. The experience with pavement preservation in a number of States demonstrates this success: Each dollar spent now on pavement preservation could save up to six dollars in the future.

Pavement preservation strategies are not well suited for pavements requiring major rehabilitation or reconstruction. Furthermore, implementation varies with

pavement conditions and climatic, environmental, and other regional factors, requiring each agency to adapt methods to its own conditions. No treatment can ward off pavement deterioration forever. But the strategies and techniques of pavement preservation can significantly slow the rate of deterioration.



Extending the useful life of pavement

This graphic contrasts the traditional approach to pavement maintenance against a proactive strategy of pavement preservation. The traditional approach allows the original pavement to deteriorate to fair to poor condition, at which point structural damage has often occurred, triggering the need for expensive and time-consuming rehabilitation. A pavement preservation strategy, in which relatively low-cost preventive maintenance treatments are triggered at more frequent intervals, results in a much greater interval between pavement rehabilitations.

SPREADING THE WORD

Highway agencies often lump a variety of maintenance activities together, with the resulting collection all too often neglected in favor of other highway funding needs. In many States, the snow and ice control required for a hard winter—or an unexpected heavy storm—can consume a large share of the maintenance budget. The secret, then, to successful implementation of pavement preservation is dedicated funding. Once legislators, highway management, and the public grasp the cost-effectiveness of these strategies, the successes seen in California, Georgia, Michigan, New York, and Texas will become more widespread.

Fortunately, champions have come forward, and a number of efforts are under way nationwide to advance pavement preservation, including the following:

- The American Association of State Highway and Transportation Officials (AASHTO) Lead States team on pavement preservation reaches highway agencies through videos, workshops, seminars, and publications in cooperation with other interested organizations. The team also developed pavement preservation research protocols (for copies, contact the AASHTO Innovative Highway Technologies Web site at leadstates.tamu.edu/pp/library). The information derived from these protocols, when combined with life-cycle cost analysis, will be essential for improved, informed decisionmaking.
- In 1997, an expert task group (ETG) drawn from AASHTO, industry, and FHWA was established to provide guidance and technical assistance in pavement preservation and related training and research. FHWA, AASHTO, and industry groups also signed a formal letter of understanding to jointly fund development of short courses on pavement preservation. The National Highway Institute has undertaken the development of the first two courses of several planned, “Pavement Preservation: The Preventive Maintenance Concept” (course #13154) and “Pavement Preservation: Selecting Pavements for Preventive Maintenance” (course #13158). Slated for future development are two additional courses on quality design/construction of preventive maintenance and the integration of preventive maintenance criteria into pavement management systems.
- In 1998, AASHTO, FHWA, and the Foundation for Pavement Preservation conducted the “Forum for the Future,” at which stakeholders identified roadblocks and barriers to future improvements in pavement preservation. The result was a road map for future action and initiatives (Publ. No. SA-99-015, currently available from the Research and Technology Report Center; phone: 301-577-0818; fax: 301-577-1421).

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