



MAINTENANCE TECHNICAL ADVISORY GUIDE

Volume I – Flexible Pavement Preservation

Second Edition



State of California Department of Transportation

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PREFACE

Pavement preservation is becoming more and more important in preserving the conditions of the national highway system. More than 1.75 trillion dollars have been invested in the highway system, managing and preserving this investment is increasingly the goal of highway agencies around the country. More and more agencies are realizing the benefits of having a sound pavement preservation program. These benefits include improved pavement performance, increased mobility and roadway safety, overall improved customer satisfaction, and reduced life-cycle costs.

The California Department of Transportation (Caltrans) has been a leader in promoting and advancing the pavement preservation technology. Considerable efforts have been devoted in this area. In 2001, Caltrans initiated an effort in developing a maintenance technical advisory guide (MTAG) for flexible pavement. The intention of the guide was to provide technical and uniform guidelines to Caltrans personnel in their pavement maintenance and preservation activities. The first edition of the MTAG for flexible pavements was developed in 2003 and the Federal Highway Administration is currently developing a web-site for sharing the knowledge contained in this guide.

To obtain the most current technology and technical expertise from various agencies and industry, Caltrans established the Pavement Preservation Task Group (PPTG), a partnership between Caltrans, industry, local agencies and academia to work on important pavement preservation issues that related to both the flexible and rigid pavements. Subtask groups focusing on specific areas of expertise were established and they have provided information in support of this document.

As the paving technologies and materials science advances, new innovations in pavement preservation have emerged. This second edition was developed to update the topics covered in the first edition with the most current information and to include the new innovations and new pavement preservation treatment technologies being used in the paving industry. Like the first edition, the second edition addresses maintenance strategies related to the flexible pavements and is designed for several levels of use, ranging from general instruction to specific work practice descriptions. It should be of use to District Maintenance Engineers, Maintenance Supervisors, Superintendents, and Field Personnel. Construction personnel and designers may also find the information useful.

The second edition of the MTAG for flexible pavement preservation consists of thirteen chapters. Chapter 1 is introduction, presenting a brief overview and purpose of pavement preservation, a brief discussion of common distresses found in flexible pavements on California's roadways. Chapter 2 describes the materials used in maintenance treatments. Chapter 3 presents a framework for strategy selection process for flexible pavement maintenance and preservation treatments. Chapters 4 through chapter 13 provide a detailed description of various treatments that Caltrans has been using to maintain and preserve the flexible pavements. These treatments include the following:

- Crack Sealing, Crack Filling, and Joint Sealing
- Patching and Edge Repair
- Fog and Rejuvenating Seals
- Chip Seals
- Slurry Seals
- Microsurfacing
- Thin Maintenance Overlays
- Bonded Wearing Courses
- Interlayers
- In-Place Recycling

This advisory guide is intended to serve as a comprehensive, useful reference. The document will be updated and revised as new information become available.

ACKNOWLEDGMENTS

The development of the MTAG has been under the technical direction of Dr. Shakir Shatnawi, Chief of the Office of Pavement Preservation. The document was reviewed by Caltrans Maintenance Personnel, the Pavement Preservation Task Group (PPTG), and the Pavement Standards Team (PST). For questions on the guide, please contact:

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The PPTG reviewed the first edition of the MTAG and provided many technical comments. These comments set the stage for the second edition. The co-chairs of the PPTG for flexible pavements are Dr. Shakir Shatnawi from Caltrans and Gary Hildebrand from industry. The PPTG for flexible pavements consists of the following subtask groups:

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