



US Army Corps  
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Appendix 1

# Hot-Mix Asphalt Paving

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Federal Aviation Administration

Federal Highway Administration

National Asphalt Pavement Association

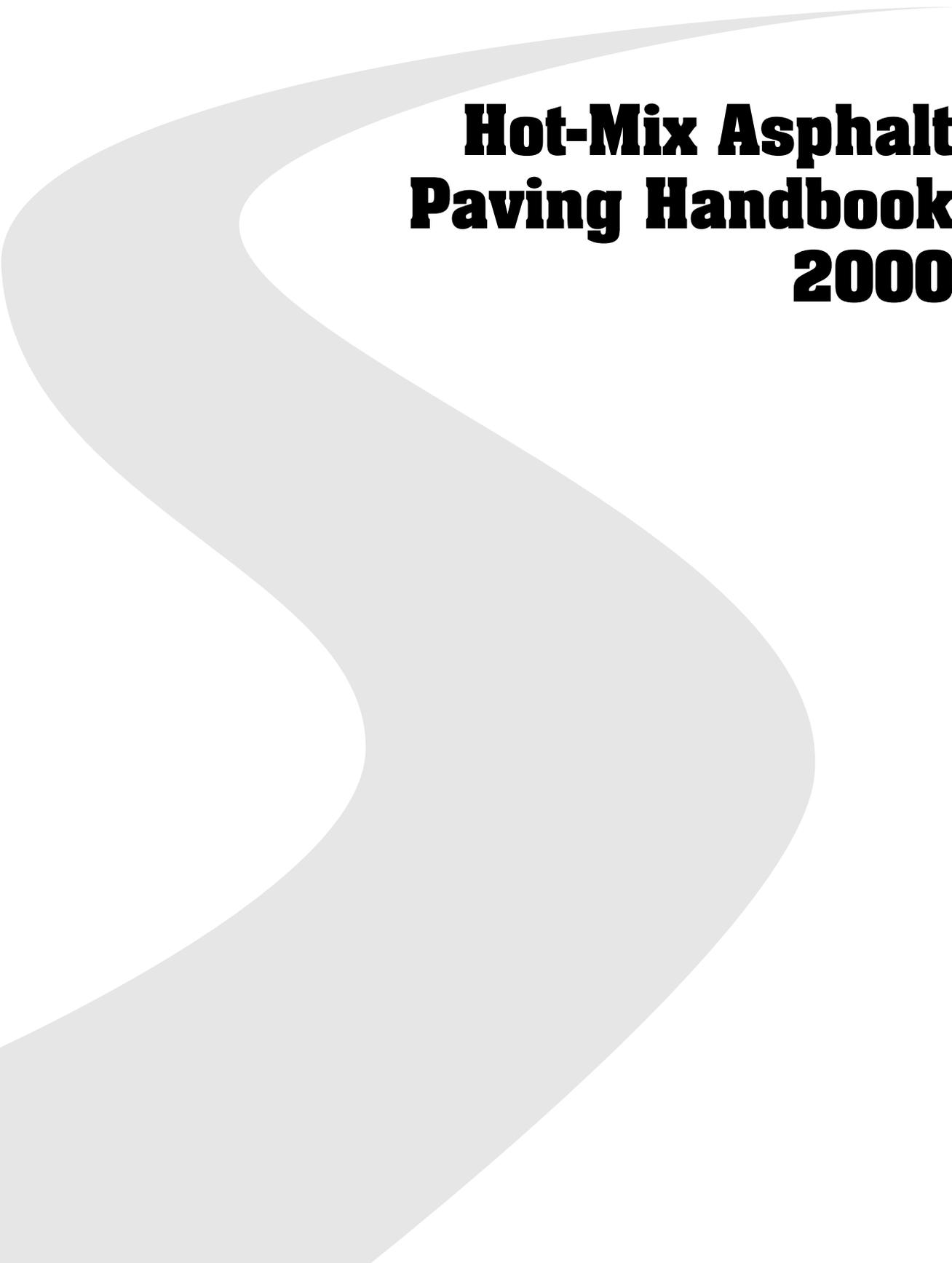
U.S. Army Corps of Engineers

American Public Works Association

National Association of County Engineers

# HANDBOOK

## 2000



**Hot-Mix Asphalt  
Paving Handbook  
2000**

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# PREFACE

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In the year 2000, more than \$20 billion will be spent in the United States to construct asphalt pavements for highways and airports. In a period in which pavement performance demands are increasing dramatically, asphalt paving contractors, public agencies, and the pavement research community share the opinion that the utmost care must be taken to construct these pavements properly. It is also important that improvements resulting from significant research findings and technological advances be incorporated into hot-mix asphalt paving practice in a timely fashion. Pavement experts agree, however, that highway and airport agencies and their pavement contractors have difficulty not only in incorporating new technology and research findings into field practice, but also in consistently applying proven procedures from earlier research experience.

Training is also a problem in this decentralized industry, where many producers and contractors operate on too small a scale to make long-term investments in personnel development. As a result, the knowledge and experience of field personnel are often not up to date, and pavement quality frequently may not meet modern performance demands.

Responding to recommendations from industry, government, and academic officials, the first edition of the *Hot-Mix Asphalt Paving Handbook* was prepared by the Transportation Research Board (TRB) in 1991 with financial support from the American Association of State Highway and Transportation Officials, the Federal Aviation Administration, the Federal Highway Administration, the National Asphalt Pavement Association, and the U.S. Army Corps of Engineers. Although field manuals and handbooks were then available from many sources, none had been adopted by all major industry segments. Since its appearance, the *Hot-Mix Asphalt Paving Handbook* has been widely accepted as a standard training aid throughout the major segments of the paving industry. As a result, a great deal of confusion among personnel from contractors and specifying agencies regarding paving practices has been alleviated.

In the 1990s, asphalt paving practices evolved rapidly, and TRB has updated the handbook at the request of its sponsors to address this evolution. This second edition of

the handbook addresses recent research findings including those of the Strategic Highway Research Program, new paving equipment, the growth in recycling, changes in quality control practices, and the introduction of new techniques from Europe and elsewhere. This edition also uses both the American customary and International System (metric) units of measurement.

As with the first edition, this handbook is being technically approved and distributed as a general guide for asphalt paving construction by its financial sponsors. It is also being made available through the American Public Works Association and the National Association of County Engineers.

This handbook covers the state of the art of asphalt paving, including plant operations, transportation of materials, surface preparation, laydown, compaction, and quality control processes. It is aimed at the field personnel who are responsible for these operations—both contractor personnel who do the work and agency personnel who oversee and inspect the work. It is hoped that the handbook will continue to promote a common understanding of the processes involved and thereby result in improved asphalt pavement construction.

The handbook is not intended to cover administration, contracting procedures, site investigation, geometric design, structural design, or mix design, although some general information is included concerning contract administration and mix design. Therefore, existing agency policies and procedures will have precedence in these areas.

To undertake this update, the National Research Council (NRC) appointed a study committee chaired by E. Ray Brown, Director of the National Center for Asphalt Technology, Auburn University. The committee, with members knowledgeable in the various aspects of asphalt pavement construction practices and representing agencies, producers, and contractors, has prepared this update with the assistance of James A. Scherocman and Ronald J. Cominsky. Mr. Scherocman also participated in the preparation of the first edition of the handbook. The final version of this second edition incorporates changes made in response to comments received from members of the committee, approving organiza-



tions, and members of the panel appointed to review the draft in accordance with NRC's report review guidelines.

This handbook has been reviewed in draft form by individuals chosen for their diverse perspectives and technical expertise, in accordance with procedures approved by the NRC's Report Review Committee. The purpose of this independent review is to provide candid and critical comments that will assist the institution in making the published report as sound as possible and to ensure that the report meets institutional standards for objectivity, evidence, and responsiveness to the study charge. The review comments and draft manuscript remain confidential to protect the integrity of the deliberative process. Appreciation is expressed to the following individuals for their participation in the review of this report: Timothy B. Aschenbrener, Colorado De-

partment of Transportation; Lester A. Hoel, University of Virginia; Gerald Huber, Heritage Research Group; Byron E. Ruth, University of Florida; and Randy C. West, APAC, Inc. While these individuals have provided constructive comments and suggestions, it must be emphasized that responsibility for the final content of this handbook rests entirely with the authoring committee and the institution.

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The Transportation Research Board is a unit of the National Research Council, which is the principal operating agency of the National Academy of Sciences and the National Academy of Engineering. The National Research Council provides independent advice on scientific and technical matters under a congressional charter granted to the National Academy of Sciences, a private, non-profit institution dedicated to the advancement of science and technology and to their use for the general welfare.



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