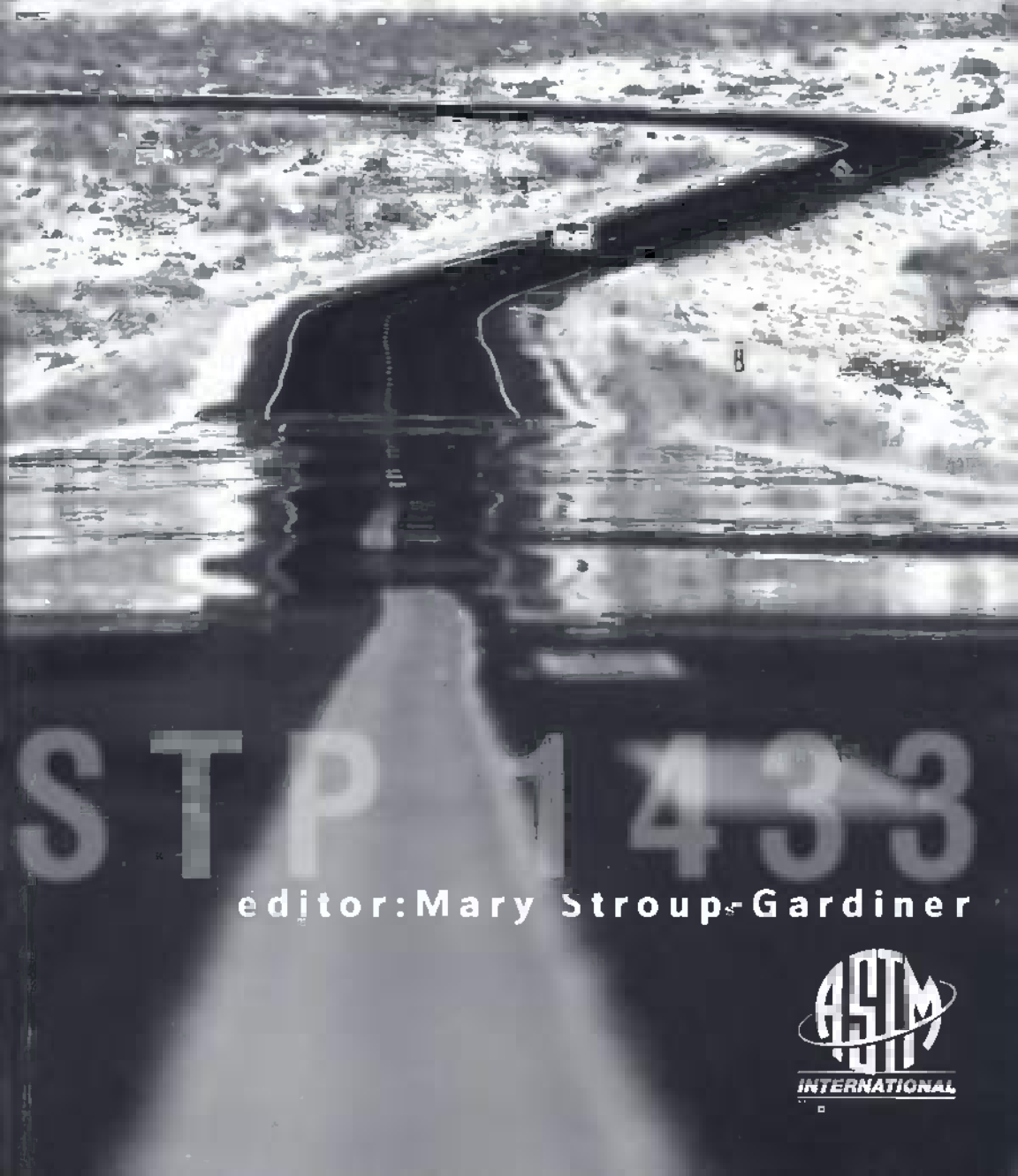


CONSTRUCTING

SMOOTH HOT MIX ASPHALTS (HMA) PAVEMENTS



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Constructing Smooth Hot Mix Asphalt (HMA) Pavements

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Foreword

This publication, *Constructing Smooth Hot Mix Asphalt (HMA) Pavements*, contains papers presented at the symposium of the same name held in Dallas, Texas, on 4 December 2001. The symposium was sponsored by ASTM International Committee D4 on Road and Paving Materials. The symposium chairperson was Mary Stroup-Gardiner, Auburn University.

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Overview

The number of miles in America's highway infrastructure increases each year, however the funds available for the construction, maintenance, and repair of this infrastructure traditionally lag far behind these needs. It is now, more than ever, critically important to maximize the quality and longevity of any highway work. The construction of smooth, or conversely, less rough, pavement surfaces has been identified as a major factor in accomplishing this goal. There is evidence that initially smoother pavements perform longer with fewer needed maintenance activities than initially rougher pavements. While this concept has spurred most agencies to formulate specifications that control the initial roughness of the pavement, there is no consensus among the agencies on what roughness parameter or equipment is best. There is also little understanding of the correlations between the types of equipment and roughness parameters.

This book represents the work of a number of authors prepared for the American Society for Testing and Materials Symposium on Constructing Smooth Hot Mix Asphalt (HMA) Pavements, December 4, 2001, Dallas, Texas. Papers and presentations were selected to highlight the state-of-the-art agency research, equipment comparisons, and innovative methods for processing profile data. This effort represents the commitment of ASTM committee D4 on Road and Paving Materials to provide a timely look at hot mix asphalt (HMA) smoothness measurements, specifications, and equipment.

State Agency Perspectives

Five papers provide the reader with insight into both the history of the development and the implementation of roughness specifications for new hot mix asphalt pavements in Alabama, Arizona, New Jersey, Virginia, and Tennessee. These papers highlight the wide range of differences in equipment and approaches used to quantify HMA smoothness by state agencies across the country. This information will provide the readers with insight into complexities associated with developing and implementing ride quality specifications.

National and International Perspectives

One paper uses an analysis of the Long Term Pavement Performance (LTPP) national pavement data base to determine the affect of various construction alternatives on the smoothness of the final HMA surface. This paper also presents correlation equations that relate measurements with traditional, but slow, hand-operated profilograph to measurements with the state-of-the-art vehicle-mounted equipment. A second paper compares the use of six devices for measuring roughness on recently constructed Taiwan highways. This information will prove especially useful for agencies faced with assessing ride quality in confined urban areas.

Equipment Comparisons, Materials Considerations, and Analyses

One paper provides information as to how various HMA mixtures, friction courses, and construction practices influence smoothness measurements and pavement quality. A second compares the results

obtained from an inclinometer profiler and a vehicle mounted profiler when used to test a wide range of HMA mixtures. Correlations between construction practices and their influence on roughness are also presented. The third paper discusses a new method for analyzing the raw profile data obtained by a wide range of profilers. This analysis method can be used to improve data processing for any equipment that collects the raw profile.

In summary, this collection of papers provides the reader with the necessary overview to understand the current state-of-the-art approaches to constructing smooth HMA pavements.

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