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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

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.

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.

CONTENTS

PART I Project Organization, Mix Design, and Quality Control

- 1** INTRODUCTION 3
 - Purpose and Organization of Handbook 3
 - Hot-Mix Asphalt Defined 3
 - Workmanship 6
- 2** PROJECT ORGANIZATION 7
 - Project Documents 7
 - Preconstruction Conference 8
 - Ongoing Communication 8
 - Project Records 9
 - Safety 12
- 3** MIX DESIGN AND THE JOB-MIX FORMULA 14
 - Asphalt Cement: Grading Systems and Properties 14
 - Aggregate Characteristics and Properties 15
 - Mix Design Procedures 19
 - Laboratory and Plant-Produced Mixes 23
 - Summary 26
 - References 26
- 4** QUALITY CONTROL/QUALITY ASSURANCE 28
 - Definitions 28
 - Method Specifications 29
 - Quality Control/Quality Assurance Specifications 32
 - Summary 38
 - References 38

PART II Hot-Mix Asphalt Plant Operations

- 5** TYPES OF ASPHALT PLANTS: OVERVIEW 41
 - Batch Plants 41
 - Parallel-Flow Drum-Mix Plants 42
 - Counter-Flow Drum-Mix Plants 47
- 6** AGGREGATE STORAGE AND HANDLING 50
 - Aggregate Stockpiles 50
 - Cold-Feed Systems for New Aggregate 52



Cold-Feed Systems for Reclaimed Asphalt Pavement	57
Addition of Hydrated Lime	59
Calibration	59
Summary	60

7 ASPHALT CEMENT SUPPLY SYSTEM	62
Storage Tanks	62
Pump and Meter System	63
Calibration	65
Addition of Liquid Antistrip Materials	66
Summary	66

8 BATCH PLANTS	67
Aggregate Handling	67
Asphalt Cement Supply System	68
Aggregate Heating and Drying	68
Screening and Storage of Hot Aggregate	69
Mixing of Aggregate and Asphalt Cement	72
Production of Recycled Mix	75
Loading in Truck or Silo	77
Emission Control	78
Calibration	78
Summary	79

9 PARALLEL-FLOW DRUM-MIX PLANTS	80
Aggregate Entry	80
Burner System	80
Heat Transfer Process	82
Asphalt Cement Injection	85
Mineral Filler and Baghouse Fines Feed System	86
Reclaimed Asphalt Pavement Recycling Systems	88
Production Rates	89
Plant Efficiency	91
Summary	92

10 COUNTER-FLOW DRUM-MIX PLANTS	93
Aggregate Entry, Heating, and Drying	93
Mixing Unit	94
Summary	95

11 SURGE AND STORAGE SILOS AND TRUCK-LOADING TECHNIQUES	96
Types of Silos and Silo Designs	96
Mix Delivery	98
Loading of Trucks from Silos	100
Summary	103

12 EMISSION CONTROL	105
Dry Collector	105
Wet Collector	106
Baghouse	108
Fugitive Dust	112
Summary	112

**PART III Hot-Mix Asphalt
Laydown and Compaction**

- 13 MIX DELIVERY 115**
 Unloading of Mix 115
 Hauling Procedures 118
 Summary 120
- 14 SURFACE PREPARATION 122**
 Base Preparation for New HMA Pavements 122
 Preparation of Existing Surfaces for HMA Overlays 123
 Summary 128
- 15 MIX PLACEMENT 130**
 Tractor Unit 130
 Screed Unit 137
 Summary 150
- 16 AUTOMATIC SCREED CONTROL 152**
 Manual Versus Automatic Screed Control 152
 Grade Control 154
 Slope Control 159
 Yield, Minimum Thickness, and Screed Controls 160
 Summary 161
- 17 JOINT CONSTRUCTION 162**
 Transverse Joints 162
 Longitudinal Joints 168
 Summary 174
- 18 COMPACTION 175**
 Definitions 175
 Factors Affecting Compaction 175
 Compaction Variables Under Operator Control 185
 Determination of Rolling Pattern 188
 Summary 192
- 19 MAT PROBLEMS 194**
 Surface Waves 194
 Tearing (Streaks) 196
 Nonuniform Texture 197
 Screed Marks 198
 Screed Responsiveness 199
 Surface (Auger) Shadows 200
 Poor Precompaction 200
 Joint Problems 201
 Checking 202
 Shoving and Rutting 205
 Bleeding and Fat Spots 206
 Roller Marks 208



Segregation **209**
Poor Mix Compaction **211**
Other Pavement Problems **212**

GLOSSARY OF ACRONYMS AND ABBREVIATIONS **213**

BIBLIOGRAPHY **214**

