CAT® PAVING PRODUCTS

GUIDE TO ASPHALT PAVING

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INTRODUCTION

The Cat Paving Products *Guide to Asphalt Paving* is intended to be a practical reference guide for the process of paving.

This guide deals with asphalt production only to the extent that production of asphalt affects the quality of the material being laid down on a project. Likewise, the design of the various types of bituminous material will be covered briefly in order to help develop an understanding of how mix design may affect the flow of material through a paver and under the paver's screed. The guide is not intended to be a reference for project design or asphalt selection.

The *Guide to Asphalt Paving* will be helpful to all personnel involved with the planning, preparation, and placement of asphalt. Certainly, the crewmembers who operate the paver should understand the information contained in the guide. Crew supervisors who help the operators and work on the planning steps will find the guide useful. Estimators, project managers and project superintendents can use the guide to help plan project efficiency and prepare to meet the requirements and specifications of various applications. Finally, quality control and quality assurance personnel will find valuable troubleshooting information in the guide.

Specific applications will be discussed in detail. However, due to the many variables in asphalt paving around the world, it is impossible to cover every situation in a reference guide such as this. Also, the terms used to describe paver components, asphalt mixes, and project variables are different around the world. When possible, for the purpose of clarity, terms will be explained or defined in different ways. For example, in this guide, the word "asphalt" will be used most often to describe what may be called "bituminous material" or "asphalt concrete" in some parts of the world.

No matter how the material being laid down by the paver is referred to, there are four basic elements to quality construction of asphalt layers. The information contained in this guide will consistently refer back to these four elements.

BASICS OF PAVING QUALITY

1. **Utilize fundamentals correctly every time.** When the crew violates certain asphalt paving fundamentals, defects in the asphalt layer usually appear.

   A crew that is well-trained in paving fundamentals and takes the time to control the fundamental aspects of paving will generally be successful. In Unit 3, "Fundamentals of Paving," these basic principles are described. They should be the foundation for all crew actions. In Unit 8, "Troubleshooting Guide," the guide demonstrates that adherence to these fundamental principles creates solutions to many common mat defects.

A well-trained crew has set up the feeder system to maintain the correct head of material.

2. **Pave efficiently.** To pave efficiently means to calculate and maintain a paving speed that consumes the mix in a steady manner and avoids long paver stops waiting for mix.

   A calculated paving speed should be used on any project that has long, uninterrupted paving segments such as a highway. Minimizing or eliminating paver stops helps to maintain smoothness and the consistency of layer temperature in front of the compaction process. Paving continuously for long periods on projects such as parking lots and city streets, is much more difficult, but striving for efficiency is still worthwhile. How to calculate paving speeds and plan for efficiency are covered in Unit 2, "Pre-project Planning."

Efficient paving means continuous paving on highway projects.

3. **Understand grade and slope requirements.** On many projects, automatic grade control and/or automatic slope control will be required to create the correct layer thickness (yield), improve smoothness, match the height of an existing structure, and/or to create profile (slope).

   Before starting to work, the project's requirements must be determined and grade and slope control must be set up to make the paver create the desired results. A paver is not set up to pave a parking lot the same way it is set up to pave an airport runway or a highway.

   Each project has different requirements and specifications. In Unit 6, "Automatic Grade and Slope Control," the basics of grade and slope control, as well as specific tips for controlling yield, smoothness, joint matching, and so forth are discussed.

Set up grade and slope control according to project requirements or specifications.

4. **Avoid big mistakes.** Big mistakes, like spills in front of the paver or running low on material in the auger chamber, cause big quality problems and often result in costly rework.

   Throughout this guide, examples of paving mistakes will be shown with suggestions for learning how to avoid them. Many times, lack of planning and poor preparation contribute to mistakes. The equipment may be used incorrectly. Or, the crew may be skipping set-up steps and violating paving fundamentals.

   Whatever the cause, big mistakes should be easy to identify and correct.

Spills on the grade in front of the paver are a big mistake and should be corrected.