SECTION 1
INTRODUCTION

CONTENTS

<table>
<thead>
<tr>
<th>CONTENTS</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 SCOPE</td>
<td>1</td>
</tr>
<tr>
<td>1.2 WHY SPRAYED SEALING?</td>
<td>1</td>
</tr>
<tr>
<td>1.3 SPRAYED SEALING AND ASSET MANAGEMENT</td>
<td>1</td>
</tr>
<tr>
<td>1.4 LIFE CYCLE COSTS</td>
<td>2</td>
</tr>
<tr>
<td>1.5 USE OF THE GUIDE</td>
<td>2</td>
</tr>
</tbody>
</table>
1.1 SCOPE

This Guide has been written and revised to assist personnel involved in road construction and maintenance. It attempts to set out a sound fundamental approach to good sprayed sealing design and practice.

The information provided represents the state-of-the-art and has been drawn from the experience of our own staff, other State Road Authorities and overseas.

Due to the diversity of sealing work, it is desirable that practitioners use a common terminology to allow comparison and sharing of experience. The Guide attempts to standardise terminology across all types of sprayed sealing applications.

Another important aspect of sealing work which is sometimes overlooked is the environment and its effect on the selection, design and operational practice used for sealing. Consideration is given to environmental factors and their effect on sealing.

While the Guide covers sprayed sealing, mention of aspects of the use of asphalt and slurry surfacing has been made for the sake of completeness.

1.2 WHY SPRAYED SEALING?

Sprayed sealing is a relatively inexpensive and efficient method of applying a bituminous surfacing. The bituminous film waterproofs the surface and acts as a binder to hold the aggregate which provides the wearing surface for traffic.

In general, the main objectives of sprayed sealing are as follows:

- to provide an economical, durable, dust-free, skid-resistant surface which permits safe travel and provides improved riding qualities and comfort for road users
- to reduce vehicle operating and maintenance costs and to extend vehicle life
- to protect the pavement from the actions of traffic abrasion and weather, hence reducing road maintenance costs and repairs, by:
  - reducing the amount of water ingress to the pavement and/or subgrade
  - reducing loss of pavement moisture by evaporation, and pavement materials by wind and traffic abrasion.

A sprayed seal is generally an economical treatment for providing or improving surface characteristics, such as waterproofing or skid resistance, where shape correction or strengthening is not required. It does not normally add strength to the pavement.

The choice of a sprayed seal over other surfacings, particularly asphalt, depends on many factors including the operating environment and financial considerations.

Sprayed sealing has long been an integral part of effective pavement management. Sprayed sealing, and associated bituminous surfacing treatments, account for the vast majority of the approximately 300,000 km of surfaced roads in Australia.

On a flexible pavement in rural locations, a sprayed seal will generally be the preferred option unless other factors dictate choice of a higher class pavement and surfacing. For example, asphalt is generally used in metropolitan areas.

1.3 SPRAYED SEALING AND ASSET MANAGEMENT

Sprayed sealing is one effective method of preserving the value of the road asset and ensuring asset performance. It does, however, require an attention to detail, good practice and on-going monitoring of road pavement condition.

A pavement management system (PMS) may be used to record and monitor pavement condition. A PMS may also assist in determining road network pavement maintenance strategies, planning and prioritising maintenance activities, and ensuring cost-effective use of available resources.
Environmental damage through moisture penetration into granular layers is often as important as load damage for marginal granular pavements. Hence cracking which allows moisture penetration is a key indicator of a PMS in these circumstances. Similarly, at some locations, skid resistance is a primary consideration.

Management of road assets requires maintenance and rehabilitation strategies based on road network priorities and needs in order to optimise resources. The resealing cycle, for example, should reflect the total network needs according to a rational analysis, such as that provided by a PMS.

This Guide provides information which may be used in conjunction with a PMS to ensure effective management of a road network.

Asset management is concerned with maximising the service life of roads. The life expectancy of a sprayed seal depends on prevailing conditions, however most pavements provide adequate service for between 10 and 12 years without major maintenance or rehabilitation. Resealing, as a preventive maintenance strategy, will restore original surface texture and improve skid resistance. It will also extend the life of a properly designed pavement.

1.4 LIFE CYCLE COSTS

Proper asset management should always consider the long term life of the pavement and life cycle costs.

There is usually more than one surfacing treatment that may be used in any situation. Choosing the most appropriate and cost effective treatment strategy requires a long term perspective. It also requires a knowledge of the alternative surfacing treatments, the life expectancy of each, and possible rehabilitation and maintenance measures for extending the life of the pavement.

The best solution isn’t always the treatment with the lowest initial cost. The best treatment strategy will be the one that provides the lowest cost on a whole of life basis within current and expected funds availability. As different strategies have different life expectancies, this is usually expressed in terms of the lowest “Equivalent Annual Cash Flow”.

1.5 USE OF THE GUIDE

The intention of the Guide is to supply both experienced and inexperienced practitioners with a useful, working document.

The Guide is structured to require an evaluation of the existing pavement surface to be made in the first instance.

Where applicable, the various pretreatment options that can be carried out prior to a further assessment, are presented for consideration and implementation prior to the selection of a sealing treatment.

In the majority of cases, several sealing treatment options are possible but the final selection should be based on life cycle costing.

The following general areas are covered in the Guide:

- administration
- terminology
- environmental factors
- assessment of the pavement
- available pretreatments and repairs
- selection of appropriate materials
- selection of a sprayed treatment
- design of the sealing treatment
- application of the sealing treatment
- recording procedures
- monitoring
- remedial treatments.

The structure and interaction of the various sections in this Guide are shown in Figure 1.1.

The Guide emphasises the importance of good design for sprayed sealing, and stresses the importance of regular follow
up inspections of all sealing works. This is to ensure the work is performed according to the design requirements, so that the intended effective life of the seal is achieved. It also results in improved knowledge of sprayed sealing and better asset management.

Developments in sprayed sealing technology can contribute to more effective management of our road assets.

In Section 11 of the Guide, preliminary information on new processes and treatments is presented in order to keep users up to date with the latest sprayed sealing related developments. Section 11 is for information purposes only and no endorsement of the particular process or treatment is implied.

The Guide covers all of the administration, recording and monitoring procedures which will be necessary to verify the work at any point in time. The Guide may also be used in conjunction with both quality control and quality assurance specifications.

An expert system, for use on a personal computer, has been developed for the seal design procedure described in this Guide and is available from Pavements Branch.