

Sprayed Sealing - Joints and Application Rates

pavement work tips — no. 20

February 2000

INTRODUCTION

An important aspect of sprayed seal work is consideration of traffic distribution and design of binder application rates for the expected traffic volume in each lane. This may result in different binder application rates for different lanes of multi-lane facilities and higher binder application rates to shoulders and other lighter trafficked areas.

Care is also required in selecting the location of longitudinal joints between sprayer runs, particularly where changes of binder application rate are required. This needs to take into account traffic behaviour in particular wheel path locations as well as the location of lane markings.

GENERAL

As a general rule, longitudinal joints should coincide with lane markings.

Placing longitudinal joints in the same position as lane lines is the logical place to make any change to the design application rate. It also provides a neat appearance and ensures that any minor overlap between spray runs is placed in an area of least traffic and is less likely to flush or strip.

EXCEPTIONS TO THE GENERAL RULE

Exceptions to the general rule occur where traffic does not follow lane markings and travels on or over the lane line, causing flushing of the seal overlap or flushing in areas designed for lower traffic volumes. Particular examples are outlined below.

Sealed Shoulders

Sealed shoulders generally require much higher binder application rates than trafficked pavement lanes. In some situations, heavy traffic may overhang the outer edge line and travel partly on the shoulder resulting in severe

flushing. In such cases it may be necessary to increase the width sprayed at the lower (heavy traffic) binder application rate by 200mm to 500mm, depending on actual traffic usage. Similar circumstances can also apply to adjoining traffic lanes where there is a significant difference in binder application rate (more than about 0.3 L/m²).

Situations where traffic is likely to overhang lane markings and edge lines include:

- Major interstate freight haulage routes.
- Roads carrying high volumes of commercial vehicles where:
 - Speed or capacity is limited and commercial vehicles move aside to facilitate overtaking by faster vehicles. This can occur on long hills and climbing lanes.
 - Alignment is curved, particularly if lane widths are minimal and shoulders are wide.
- Roads with tight curves.

Vehicles are less likely to overhang edge lines and travel on the shoulder where:

- Roads are of a high standard with good alignment, flat grades and adequate lane width.
- Tactile edge lines are used to provide audible warning when crossed.
- Total shoulder width is less than 600mm.

Lane Merging and Variable Traffic Paths

On wide pavements associated with turning lanes and turning traffic, vehicles may ignore lane markings, using the full available pavement width and travelling on areas intended to be untrafficked. The location of

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Key Summary

This issue of 'pavement work tips' provides a guide to determining location of changes in application rate and hence positioning of joints in sprayed seals.



changes to binder application rate for sprayer runs should be based on actual traffic behaviour to avoid flushing in those areas subject to heavy traffic, while ensuring that there is adequate binder in those areas that remain lightly trafficked.

Typical examples of such traffic behaviour occur at ends of freeway entry and exit ramps and some road junctions.

A further situation requiring careful consideration of joint layout and varying application rates occurs when lanes merge or diverge on multi-lane carriageways. In such cases it is recommended to spray straight through the more heavily trafficked lane. Areas where traffic paths merge and cross are generally sprayed at the binder application rate applicable to the more heavily trafficked lane. The lower trafficked lane is then tapered to match.

Careful planning of spraying in tapered areas is required to keep handwork to a minimum while avoiding excessive use of paper at the run-on or run-off.

TRANSVERSE JOINTS

The placement of transverse joints should avoid areas:

- within 50 m of intersections or pedestrian crossings,
- within curves, and
- the approach and exit from curves.

Changes to surface type and conditions should be avoided at the approach and exit to curves as well as the area within the curve.

CONCLUSION

Placing of longitudinal joints directly under lane markings generally provides the best overall performance and appearance of completed sprayed seal work.

It should not always be assumed, however, that traffic will always stay within notional wheel paths where there are limitations in road capacity or difficulty in manoeuvring heavy vehicles.

Figure 1: Flushing of shoulder from heavy vehicles travelling outside lane markings on rural freeway



Observation of traffic behaviour, and common sense, are required in determining the position of longitudinal joints, and selection of design binder application rates, to avoid flushing or stripping in areas that carry different traffic volumes to that assumed from the notional layout.

For more information on any of the construction practices discussed in "pavement work tips", please contact either your local AUSTROADS Pavement Reference Group representative or AAPA — tel (03) 9853 3595; fax (03) 9853 3484; e-mail: info@aapa.asn.au A complete list of "pavement work tips" issues is available on AAPA's web site: www.aapa.asn.au

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