Guideline

# **Preparing Pavements for Resealing – Planning of Works**

December 2024



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# 1 Introduction

This guideline provides best practice advice to personnel involved with planning and programming the Department of Transport and Main Roads annual reseal program, however, does not represent mandatory requirements. This guideline is based on Pavement Work Tips – No 9 published by Austroads / Australian Flexible Pavements Association. It has been modified to better address in more detail the local principles and practices used on the Transport and Main Roads road network.

Approximately 90% of the departments surfaced road network has a sprayed seal surfacing. Sprayed seals provide a cost-effective all-weather surfacing on low to moderately trafficked rural roads that are subject to free-flowing traffic conditions and are significantly less expensive when compared to other surfacing types (such as asphalt or concrete).

Sprayed seal surfaced roads need to be resealed periodically for the following reasons:

- the bituminous binder oxidises and becomes brittle over time (as a consequence of long term exposure to sunlight), and
- aggregate polishes (and loses skid resistance) over time due to the action of traffic.

The reseal frequency varies because of many factors, such as funding constraints and emergency maintenance However, on average, the reseal frequency across the Transport and Main Roads road network is approximately 10 years.

Pavement preparation works prior to resealing need to be planned and carried out well in advance to ensure that the newly resealed pavements have a surfacing that is:

- waterproof and durable
- textured and provides skid resistance
- uniform in appearance
- of suitable width
- of adequate ride quality, and
- adequately cured.

An initial assessment must be made to determine whether any defects that are present can be corrected with the selection of seal type, for example the use of a Strain Alleviating Membrane (SAM) seal to address cracking, or whether some form of pre-treatment is required.

Treating defects prior to resealing helps provide a stable foundation for the reseal. Reseals do not strengthen the pavement and therefore any weakness in the existing pavement surface will reflect through the new seal, unless the defect is treated. Similarly, reseals do not improve the shape (roughness, rutting, depressions, hollows, shoved areas) of the road and these defects should be treated prior to resealing to provide improved shape and ensure water is able to run off the surface as intended.

When preparing a pavement surface for resealing, the existing surface should be assessed for the type and severity of defects. The extent of preparation for resealing needs to be balanced with the following:

- Expected performance of the reseal normally a reseal is expected to provide service for more than 10 years. Reduced preparation for resealing would be appropriate where seals are used as holding treatments and expected to have a shorter service life.
- Surrounding road environment consider the roughness of the surrounding sections to ensure the planned repairs provide reasonable ride quality and reflect similar conditions to the surrounding area.
- Meeting targets and performance measures for pavement, and
- Cost.

## 2 Preparation of a pavement for resealing

### 2.1 General

The following pavement preparation activities should always be carried out in advance of resealing:

- repair defects such as wide cracks
- repair structural deficiencies such as areas of pavement failures, potholes and/or significant cracking
- repair shoved, rutted or depressed areas that affect the surface shape and ride quality, and
- repair edge breaks to re-establish the width of the pavement.

Section 7 provides images of some of the defects requiring preparation works prior to resealing.

A pavement that is well prepared for resealing should generally have a uniformly textured surface, a smooth ride where practical, be well drained and contain only minor defects that can be corrected by the reseal.

The texture of the repaired surface should match the adjoining surface texture as far as practicable. Any variations in the existing surface are likely to be reflected into the texture of the new surface, potentially resulting in stripping or flushing of the new seal at these locations.

### 2.2 Preparation activities

### 2.2.1 Crack repairs

Areas of pavement with significant crocodile cracking should be removed and replaced as this generally indicates an underlying pavement failure that will not be rectified by a reseal.

Depending on traffic volumes, cracks less than 2 mm wide and minor crocodile cracking can generally be successfully treated with a SAM seal or a Geotextile Reinforced Seal (GRS).

Cracks wider than 2 mm should be repaired by sealing with:

- hot or cold pour crack sealants (most common)
- binder and grit systems, or
- over-banding techniques.

An alternative is to use a microsurfacing treatment to correct shape and lock in cracked segments, followed by a SAM seal, or a GRS. The GRS will provide additional waterproofing and minimise the risk of aggregate embedment of the newly applied seal into the microsurfacing.

Crack sealing treatments are further described in Austroads *Guide to Pavement Technology* Part 5, Austroads Pavement Work Tips – No 8 and skin patching techniques in Pavement Work Tips – No 45.

### 2.2.2 Repair of structural defects / potholes

Structural defects should be repaired by patching. The materials used for the repairs should be given sufficient time to cure before further treatment. Potholes should be squared and tack coated prior to patching with asphalt.

When determining the extent of patching consideration should be given to the following:

- If there are closely spaced patches or potholes, they should be treated using a single large
  patch to reduce the number of joints and hence provide a more uniform and smoother repair.
  This will also assist with higher quality of compaction of patching materials especially if it
  reduces the amount of hand work in the patches.
- Extend patches a practical length beyond the area that is showing clear signs of failure to treat fine cracks that may not be immediately obvious.
- It is preferable that patching is undertaken across a full lane width, as this generally provides the best long-term results. If this is not possible, avoid placing the longitudinal joints within wheel paths.

# 2.2.3 Care should be taken to avoid boxing in the granular pavement with asphalt or stabilised patches. Correction of ruts and depressions

Where ruts and depressions exceed local maintenance intervention levels, treatment with an asphalt corrector course or microsurfacing treatment should be considered. In cases where ruts are severe and other signs of structural inadequacy are present, a granular overlay could be undertaken to provide additional pavement strength.

Guidance about local maintenance intervention levels can be found in the *Routine Maintenance Guidelines*.

### 2.2.4 Repair of edge breaks

Where edge breaks exceed local maintenance intervention levels, treatment to re-establish the width of the pavement should be undertaken. The materials used for the repairs should be given sufficient time to cure before further treatment.

### 2.2.5 Treatment of flushing

Depending on the extent and severity, it can be difficult to treat flushed or "fatty" surfaces with a seal treatment alone. Flushing may need to be treated separately from the sealing works. For possible treatment types, refer to Pavement Work Tips – No 7.

Where flushing in the wheel paths is relatively consistent (and not severe), this can often be addressed as part of the sprayed seal treatment by:

- a) pre-spraying areas outside the wheel paths in accordance with Pavement Work Tips No 36, or
- b) using a sprayer that can apply a variable transverse distribution.

High Pressure Water Retexturing (HPWR) on flushed wheel paths can provide effective removal of excess bitumen and subsequently restoring adequate surface skid resistance. Note that HPRW may dislodge aggregate during the process and resealing may be required to provide sufficient waterproofing.

# 3 Other maintenance activities adjacent to reseals

Shoulder repairs (including excessive drop-off or build up) or reinstatement of longitudinal surface drainage should be undertaken well in advance of resealing work as per the recommendations in Table 1. Mowing grass and spraying / removing grass and vegetation along the seal edge should also be undertaken 2 – 3 weeks prior to the resealing work.

Similarly, these works should not be undertaken too soon after sealing as the surfacing may be easily damaged.

# 4 Pre-planning

To ensure satisfactory performance of the reseal, it is necessary to carry out the preparation treatments well in advance of the reseal using the appropriate materials and equipment.

Advance preparation is essential as uncured bituminous maintenance treatments and embedment of aggregate into patching materials can lead to bleeding and adversely affect the quality of the subsequent reseal.

High Pressure Water Retexturing (HPWR) on aged seals can result in cracking being exposed and compromise the waterproofing ability of the existing seal through the following winter period. If HPWR is used as a reseal preparation treatment, it is good practice to have it completed before hot weather commences and within 2 to 6 months of the resealing works.

Avoid other concurrent maintenance or construction activity (including those undertaken by adjacent asset managers, e.g. utilities, Council / Shire) that may adversely affect the early life of the reseal, such as tree trimming, shoulder maintenance and repairs, trenching (for installation / renewal of services or drainage), installation of safety barriers or reinstating any surface drainage.

Table 4 provides desirable guidelines for the pre-planning and undertaking of maintenance treatments.

Table 4 – Desirable minimum times for maintenance treatments to be completed befor	е
resealing	

Maintenance treatment	Comments	Desirable minimum time for maintenance activity to be completed before resealing <sup>1</sup>
Crack repairs	Typically used to repair environmental cracks in the existing surface	
Hot bituminous products		2 months

Maintenance treatment	Comments	Desirable minimum time for maintenance activity to be completed before resealing <sup>1</sup>
Emulsion		2 months
<ul> <li>Repair of:</li> <li>Pavement failures, potholes and significant cracking</li> <li>shoved, rutted or areas of loss of shape</li> <li>edge break</li> </ul>		
Asphalt (MRTS30 <i>Asphalt Pavements</i> )	Typically used in urban locations and heavily trafficked roads. Use of M1000 or A15E binder in the asphalt can help reduce the amount of embedment when sealing over relatively new asphalt patches.	2 months
Microsurfacing	Typically used for large scale shape correction on lower traffic rural roads.	6 months
Pre-mixed / cold mix asphalt made with bitumen emulsion	Typically limited to small scale pothole repairs on low traffic roads. Pre-mixed / cold mix asphalt made with bitumen emulsion will cure more quickly than that manufactured with cutback bitumen.	4 months
Pre-mixed / cold mix asphalt made with cutback bitumen <sup>1</sup>	Typically limited to small scale pothole repairs on low traffic roads. Pre-mixed / cold mix asphalt made with bitumen emulsion will cure more quickly than that manufactured with cutback bitumen.	6 months (or longer depending on the formulation used)
Initial seals using cutback bitumen on unbound or stabilised pavement repairs	Typically used on rural roads	3 months during hot weather 6 months during cold / cool weather
Initial seals using emulsion on unbound or stabilised pavement repairs	Typically used on rural roads	2months
Treatment of flushed/bleeding areas by:		
Dry matting with a small size aggregate	Typically used for small areas, initial seals and where bleeding is severe. The size of aggregate to be used is dependent on the severity of the flushing / bleeding, however, safety factors (loose aggregate) must be considered and managed appropriately.	Dry matting is typically undertaken on the day of the reseal as necessary to minimise risks associated with loose stone.

Maintenance treatment	Comments	Desirable minimum time for maintenance activity to be completed before resealing <sup>1</sup>
Using chemical solvents <sup>1</sup> (refer to Pavement Work Tips – No 7 and 48)	Typically used to enhance the 'dry matting' process. Its use depends on the liveliness of the binder and severity of the flushing / bleeding.	2 months
High pressure water retexturing	Typically used for large areas requiring treatment and should not be applied to initial seals where it may result in insufficient binder to hold the aggregate in place or compromise the waterproofing layer.	Up to 2 months
Maintenance of shoulders and drains		
Shoulders (including mowing of grass and removing / killing vegetation along the seal edge)		2 weeks
Longitudinal drains		2 weeks

<sup>1</sup> May vary depending on climatic and trafficking conditions.

### 5 Other factors

### 5.1 Treating pavements with non-uniform surface texture

Large variations in surface texture between wheel paths and other non-trafficked areas should be corrected to provide a more uniform surface texture prior to resealing.

Resealing using a sprayer than can provide a variable-transverse distribution or pre-spraying may be possible where flushing in wheel paths is uniform along the length of the work. In more severe cases, it may be necessary to apply a correction seal or use High Pressure Water Retexturing (HPWR) to achieve a uniform surface. Techniques for treatment of flushed seals and non-uniform surface texture are further described in Pavement Work Tips – No 7 and Pavement Work Tips – No 44.

### 5.2 Excessive crack sealing

Areas where crack sealing is concentrated can result in excess crack sealing binder on the pavement surface that can reflect through the reseal, in some cases causing flushing and binder pick-up. Where there is extensive cracking, it is preferable to apply a SAM / GRS seal or patch the cracked area.

### 5.3 Extend of repairs

It is usually not economical or practical to return the pavement to an "as new" condition. The extent of repairs will depend on the type of road, but should be sufficient to repair the major defects, waterproof the pavement surface and provide a safe surface for traffic.

Where preparation works, particularly patching, is extensive, rehabilitation of the pavement may be a better whole-of-life option that could be considered.

# 5.4 Linemarking

This should be programmed to occur after resealing is completed and requires liaison with RoadTek or the linemarking contractor.

# 6 List of relevant pavement work tips (from Austroads / AfPA)

Pavement Work Tips – No 7: Treatment of Bleeding and Flushed Surfaces
Pavement Work Tips – No 8: Treatment of Cracks in Flexible Pavements
Pavement Work Tips – No 9: Preparing Pavements for Resealing – Planning of Works
Pavement Work Tips – No 36: Sprayed Seals – Pre-spraying to Correct Surface Texture
Pavement Work Tips – No 44: High Pressure Water Retexturing
Pavement Work Tips – No 45: Skin Patching
Pavement Work Tips – No 48: Treatment of Flushed Seals Using Chemical Solvents

# 7 Defect images

Table 7 shows some typical defects that should be considered prior to resealing.

### Table 7 – Typical defect images

























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