Section 7
REMEDIAL TREATMENTS AND PRETREATMENTS

REMEDIAL TREATMENT OF SPRAYED SEALS

PRETREATMENT OF
- Unsealed Surfaces
- Asphalt Surfaces
- Concrete Surfaces
7.1 REMEDIAL TREATMENT OF SPRAYED SEALS

General

It is difficult to achieve a unique solution to remedy defects in a sprayed seal. Often more than one type of defect is apparent and in some cases the types of remedial treatment can be conflicting. The designer must try to minimise this conflict and devise a compromise solution that will solve the problem/s.

The following sections describe procedures that can be adopted to remedy either a specific defect in a sprayed seal or failures resulting from accidental damage.

Where difficult situations exist, specialist advice should be obtained.

Binder Hardener Treatment

- Binder hardener is sprayed onto the surface at the rate of 0.45 to 0.50 L/m²
- Allow 10 to 20 minutes for the binder hardener to initially soften the binder. This will take longer for polymer modified binders.
- Spread and roll precoated aggregate into the surface. The use of a rubber tyred roller is preferred.
- Open to traffic for a short time and observe the treated area. If the aggregate settles quickly into the soft binder, more aggregate should be applied.

Types of Remedial Treatment

There are a number of remedial treatments which may be used in any failure situation. The type of treatment used will be chosen on suitability and economy. The most common types of remedial treatment used by the Authority are given in Table 7.1.

Selection of Remedial Treatment/s

When the type and extent of failure is determined, an appropriate type of remedial treatment may be selected. Remedial treatment/s for specific failures are given in Table 7.2.

7.2 DETAILS OF SPECIFIC FAILURES AND REMEDIAL TREATMENTS

Flushed wheeltracks

Flushing in wheeltracks occurs when traffic has pushed aggregate into a soft base or into surplus binder, causing the binder to rise to the tops of the aggregate. The tops of the aggregate are still visible, but there is minimal surface texture.

The binder can be either:

- Fresh, and may contain cutter oil from recent sealing operations. Use the corrective “Bitumen Hardener Treatment” (see 7.1). After correction, the selection of a surfacing treatment should be reassessed as described in Section 3.

  or

- Hard and oxidised. A reseal may be designed using the design procedure described in Section 4.

Bleeding wheeltracks

The aggregate is totally embedded in the binder. There is no surface texture and the surface has low friction. Use the corrective “Bitumen Hardener Treatment” described above.

After correction the seal should be re-assessed as described in Section 3.
<table>
<thead>
<tr>
<th>Type</th>
<th>Brief description of treatment</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>Application of binder hardener and fine aggregate.</td>
</tr>
<tr>
<td>B</td>
<td>Incorporation of precoated fine aggregate into surface on a hot day.</td>
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<tr>
<td>C</td>
<td>Incorporation of hot fine aggregate into surface.</td>
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<tr>
<td>D</td>
<td>Reseal with appropriate size aggregate.</td>
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<td>E</td>
<td>Application of a 7 mm reseal.</td>
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<tr>
<td>F</td>
<td>Application of a 7 mm or 10 mm reseal, as appropriate, with a low residual binder application rate and high cutter oil content.</td>
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<tr>
<td>G</td>
<td>Incorporation of a clean 7 mm aggregate (precoated with cutter oil) into surface.</td>
</tr>
<tr>
<td>H</td>
<td>Application of an enrichment treatment.</td>
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<tr>
<td>I</td>
<td>Application of successive scatter coats of fine aggregate.</td>
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<tr>
<td>J</td>
<td>Application of a fine aggregate reseal at high binder application rate.</td>
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<tr>
<td>K</td>
<td>Application of a rejuvenation treatment. Follow with an enrichment treatment or reseal 3 months later.</td>
</tr>
<tr>
<td>L</td>
<td>Application of a SAM seal.</td>
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<tr>
<td>M</td>
<td>Application of a 7 mm primerseal.</td>
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<td>N</td>
<td>Application of a 7 mm seal using bitumen emulsion binder.</td>
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<td>O</td>
<td>Application of dense graded asphalt as appropriate.</td>
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<td>P</td>
<td>Application of open graded asphalt</td>
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<tr>
<td>Type of Failure</td>
<td>Extent of Failure</td>
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<tr>
<td>Flushing</td>
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<td>Bleeding</td>
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<td>Plucking</td>
<td>- varying</td>
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<tr>
<td>Fretting</td>
<td>- minor</td>
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<tr>
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<td>- extensive</td>
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<td>- wheeltracks</td>
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<td>Aggregate Breakdown</td>
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<td>Binder Oxidised</td>
<td>- almost no cracking</td>
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<td></td>
<td>- minor cracking</td>
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<td></td>
<td>- extensive cracking</td>
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<td>Peeling</td>
<td>- minor</td>
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<td></td>
<td>- extensive</td>
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<tr>
<td>Geotextile reinforced seal</td>
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<tr>
<td>Stripping</td>
<td>- aggregate stripping</td>
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<td>Shape</td>
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<td>Rupture</td>
<td>- damage to geotextile</td>
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Note: * Details of treatment type/s are given in Table 7.1.
Stripping and plucking

Stripping is the loss of aggregate under traffic, caused by the separation of the binder film from the surface of the aggregate, usually in the presence of water.

Plucking is the loss of aggregate with some binder attached, from a seal that is still lively.

When stripping or plucking occurs, some binder will remain on the pavement surface. The type of corrective treatment will depend on the quantity and condition of the binder.

Whilst the mechanisms for aggregate loss are different, people have tended to use the word "stripping" to describe both processes.

Stripping - extensive (full width)

- Use the corrective "Bitumen Hardener Treatment" (see section 7.1) for road temperatures above 5°C.
  or
- Place a reseal designed to have a higher than normal percentage of cutter oil, a low residual binder application rate, and a 7 mm or 10 mm aggregate. Suggested is:
  
  10-20% cutter oil with a residual binder application rate of 0.30-0.45 L/m² for a minimum pavement temperature of 35°C.
  or
- Roll hot aggregate from an asphalt plant into the surface provided the pavement temperature is greater than 35°C.
  or
- Roll clean aggregate precoated with cutter oil into the surface. The minimum pavement temperature suggested for this treatment is 45°C.

Stripping - partial

- Extensive stripping in the wheeltracks or between wheeltracks only:

Use any one of the treatments for "Stripping - extensive (full width)" in the stripped areas only. The sprayer should be calibrated for the width sprayed, including any narrow widths.

- Scattered partial stripping:

  Apply a 7 mm reseal over the whole area. Design the binder application rate for the stripped areas.

  Minor sections may be corrected by hand spraying and spreading fine aggregate.

Plucking - extensive (full width)

Use the corrective "Bitumen Hardener Treatment" (see section 7.1) for road temperatures above 5°C.

Plucking - partial

(a) Extensive plucking in the wheeltracks or between the wheeltracks only

Use either of the first two treatments specified for "Stripping - extensive (full width)", or successive scatter coats of fine aggregate in the plucked areas only. The sprayer should be calibrated for the width sprayed, including any narrow widths.

(b) Scattered partial plucking

- Apply a scatter coat of fine aggregate and roll into the surface. Repeat the procedure as necessary until the underlying seal has locked into position.
  or
- Over the whole area place a reseal using a higher than design percentage of cutter oil, a low residual binder application rate, and a 7 mm aggregate.

It is suggested that 10-20% cutter oil with a residual binder application rate of 0.4 L/m² for a minimum pavement temperature of 35°C should be used. Design the binder application rate for the plucked areas. Minor sections may be corrected by hand spraying and spreading aggregate.
Fretting

Fretting is loss of aggregate, caused by the brittle fracture of the film of binder under aggregate particles.

Fretting may occur in two possible conditions and may be treated as follows.

A new seal where the binder has been under-applied and cold weather has increased the binder viscosity.

(a) Minimal fretting
   - Apply an enrichment treatment for low traffic volume roads or shoulders,
     or
   - Apply a fine aggregate reseal with a high binder application rate. The rate is adjusted to
take up the shortfall in binder of the fretting seal. This treatment is suitable for all traffic volumes.

(b) Extensive fretting
   - Apply a fine aggregate reseal. For the design, assume a surface texture allowance for a smooth surface.

A seal in which the binder is oxidised

(a) Minimal aggregate loss
   - Apply a rejuvenation treatment followed 3 months later by an enrichment or reseal
     or
   - Apply an enrichment treatment
     or
   - Apply a reseal

(b) Extensive aggregate loss
   - Apply a 7 mm reseal - this will provide an even surface for later reseals.

Polishing

Polishing is a condition whereby the surface of the aggregate becomes smooth under the action of traffic. Polishing failures occur in the wheeltracks.

Where polished aggregate is the problem, the surface should be resealed with an aggregate of higher PAFV.

Under special circumstances, such as an asphalt surface where good resistance to skidding is required but a coarse textured surface is unsuitable, e.g. at tollgates, an appropriate treatment is to use a bitumen based epoxy resin binder covered with a fine aggregate such as calcined bauxite (see Section 6). Such treatments are very expensive.

Aquaplaning

Aquaplaning is a condition occurring on a wet road when a vehicle tyre loses contact with the road surface due to a film of water. This is due to a lack of surface texture and drainage provided by the surfacing.

Where aquaplaning is the problem, the surface should be either resealed using a seal with greater surface texture or overlaid with open graded asphalt.

Aggregate Breakdown

The rate of wear, crushing and breakdown of an aggregate under traffic depends on its composition, type of source rock, surrounding environment and imposed traffic loading.

When aggregate breakdown occurs, any remedial action should be delayed as long as practicable to allow the seal to stabilise. A 7 mm reseal should then be applied over the full width of the sealed surface.

Binder Oxidised

When the binder in a seal has oxidised and become very brittle, an early remedial treatment should be applied to obviate further deterioration. If this is not done and the binder begins to crack, a more substantial remedial treatment will be required.

Binder oxidation may occur in three conditions and may be treated as follows.

Almost no cracking

   - Apply a rejuvenation treatment followed 3 months later by an enrichment or reseal
or
• Apply an enrichment treatment
  or
• Apply a reseal

*Minor cracking*
• Apply an enrichment treatment.
  or
• Apply a reseal.

*Extensive cracking*
• Apply a reseal.
  or
• Apply a SAM seal.

An enrichment treatment is only an option when the seal has adequate texture depth, especially in the wheeltracks.

*Peeling*

Peeling is a condition whereby the seal has debonded from the base and been removed by traffic, leaving the surface of the base in an unprotected condition.

The following treatments should be applied only to the affected areas and trafficked for at least 12 months before resealing. During this time the surface should be maintained in a serviceable condition.

*Minor peeling*
• Apply a 7 mm primerseal on affected areas
  or
• Apply a bitumen emulsion and aggregate patching treatment on affected areas

*Extensive peeling*
Apply a 7 mm primerseal over whole area.

*Geotextile reinforced seals*

The following modes of failure occur in geotextile reinforced seals:

*Aggregate stripping*
Aggregate stripping is likely to occur where:
• excess cut-off oil has been used in the tack coat and is unable to evaporate, leading to loss of aggregate adhesion.
• aggregate is not sufficiently embedded into the binder and fabric.
• the seal has become hungry due to retention of the bitumen by the fabric after sealing.
• insufficient bitumen has been applied along overlapping rolls and/or edges of geotextile.

To prevent this problem, regular resealing should be carried out on a more frequent basis than with conventional seals, particularly in the western areas of New South Wales where the process of bitumen oxidation is accelerated.

The remedial treatments for stripping are similar to those described previously. Where larger sized aggregates have been used on lowly trafficked roads, enrichment should be the only required seal maintenance.

*Shoulder problems*
• On natural formations:

Shoulder problems arise mainly where seals have been placed over natural formations, particularly those constructed over clay or silty materials. The geotextile reinforced seal acts as a moisture membrane over the clay or silt.

Where the shoulder area does not have such a membrane, it is likely to swell after taking in moisture. This will lead to a dishing effect in the surface, causing water to pond in the depressed pavement between the swollen shoulders. The ingress of moisture from the shoulder under the geotextile reinforced seal can occur for a distance of up to 800 mm from the edge of the seal towards the centre line.
Problems can also occur where the shoulder is treated with a conventional seal and not a geotextile reinforced seal. Adhesion of the bituminous binder to the unreinforced clay on the shoulder is poor, particularly as the clay dries out. This ultimately leads to break up of the seal, which frets back to the edge of the geotextile. The problem is also exacerbated by erosion of the clay shoulder.

Swelling of the shoulders can be delayed (for up to 12 months) but not prevented by the use of polymer modified binders in the seal coat.

The remedy is to make the geotextile reinforced seal as wide as possible to cover the shoulder entirely, and to bury the edge of the fabric in the outer edge of the shoulder. Geomembranes placed along the formation of the shoulder, as well as promotion of vegetation, may also assist.

- For treated pavements:
  
  Bituminous seals should be extended beyond the edge of the fabric by 100 mm to 500 mm to protect the edge of the fabric.

*Damage to geotextile*

If the geotextile is damaged causing a discontinuity in the fabric, there is a potential source of failure.

Where the geotextile itself has been torn or worn, it can be repaired with commercially available self adhesive rubberised bitumen membranes. During construction, tears in the fabric can be repaired by placing patches of clean geotextile over the hole (allowing for a 100 mm minimum overlap) and hand spraying with binder.

Wrinkles and creases should be removed by cutting the wrinkle, overlapping or cutting-and-butting the excess fabric and hand spraying with binder.

*Failures resulting from accidental damage*

Failures due to accidental damage require special remedial treatments. Details of the types of failure and remedial treatments follow.

*Spillage of fuel or oil*

Spillage of fuel and oil can result from accidental leakage from fuel or oil tanks, road tankers, after vehicle accidents and in vehicle standing/braking areas.

Petrol, distillate and other oils dissolve and soften the bitumen causing stripping and other failures. Petrol evaporates relatively quickly and hence has less time to cause seal damage.

Spillage of fuel or oil during wet weather creates a very slippery road surface condition that requires urgent attention. Traffic should be controlled until the problem is rectified.

In the first instance the fuel or oil should be hosed off the surface. Sand should then be applied to aid tyre grip and soak up remaining free oil.

Fresh petrol spillages should be smothered with sand to exclude oxygen and prevent ignition. After this treatment, seals usually suffer only discoloration.

Where stripping or other significant damage has occurred, remedial treatment should be undertaken by either resealing or the removal and replacement of the affected portion of seal.

Seals softened by oil should be removed from the pavement and replaced.

Oil affected areas at bus stops, approaches to toll booths, vehicle standing and braking areas, should be cleaned with detergent/sand and then treated with an oil resistant coating of a special polymer emulsion/sand combination (Section 3).

*Fire*

Fire includes bush fires, fires from vehicle accidents and any other fires that may occur on a road.

Bitumen is affected by high temperatures and will become hard and brittle. Bitumen will also burn if the temperature is sufficiently high.
A seal in which the binder has become hard and brittle due to fire, may require patching and resealing.

Any burnt areas of seal, should be removed and replaced.

**Mechanical damage**

Mechanical damage includes damage from vehicle accidents, farm implements and tracked vehicles.

Badly damaged areas of seal should be removed and replaced.

In areas where a seal has been damaged to the extent of no longer waterproof (e.g. by tracked vehicles) but is basically still intact, it should be resealed.

### 7.3 PRETREATMENT OF UNSEALED SURFACES

**General**

The philosophy adopted in the selection of a surface treatment is that the base material and construction of the pavement have been carried out in accordance with the relevant specifications. Where this is not the case, there is no guarantee that the selected treatment will perform satisfactorily.

Poor techniques in final preparation can result in a soft surface crust that can affect the quality and life of a sprayed seal.

Some base materials, while complying with specification are inherently soft allowing aggregate from a sprayed seal to be punched easily into them.

Following are techniques that can be used to improve the surface of the base as a pretreatment to priming or primersealing.

- **Heavy Brooming**

  In the final stages of trimming and compaction, it is poor practice to use excess water to slurry the fines to produce a smooth fine-grained surface for sealing. This soft surface crust is undesirable as it acts as a bond breaker between the unsealed surface and the sealing treatment.

When this does occur, the surface should be heavily broomed until the crust is fully removed. Where heavy brooming fails to remove the crust, the surface should be tyned and reshaped.

- **Armourcoat**

  Where the top surface of the pavement is soft as the result of a lack of stone in the base material and prone to aggregate being punched into it from a bituminous treatment, armourcoat the surface by rolling in 5 mm or 7 mm fine crushed aggregate.

**Treatment of Bound Pavements During Final Construction Stage**

Bound pavements are often difficult to penetrate with bituminous primers (e.g. cutback bitumen, emulsion, etc.).

To achieve the same effect as priming, bituminous materials may be incorporated into the surface of the base layer during the final construction stage. The targetted degree of penetration should be at least 5 to 10 mm.

This approach has been developed in the laboratory and is currently being trialled in the field.

**Why cutter?**

An amount of cutter oil is added to

- achieve penetration
- lower viscosity in cold weather

This amount should be modified to allow for the period before further seals or asphalt is applied. Suggest 8 - 10% cutter if the subsequent treatment is applied within 3 months.
7.4 PRETREATMENT OF ASPHALT SURFACES

Seals may not be adequate for pavements subject to severe friction stresses or shear forces which occur at sharp curves, roundabouts, traffic lights, particularly when pavements are exposed to fast moving heavy traffic immediately after surfacing.

Asphalt should not be used as a pretreatment where it is structurally inappropriate (see Austroads Pavement Design Guide), or where it is not required for functional reasons. The asphalt may be either dense graded or open graded depending on the requirement.

Suitable pretreatments for defective asphalt surfaces are given in Figure 7.1 for various surface conditions. Details of the pretreatments are given below.

After pretreatment, constant surveillance of the surface is very important because failures may cause rapid deterioration of the pavement. Prompt attention to minor faults may obviate major failures and prevent the development of hazardous conditions.

Ravelled Surface

Ravelling is a condition in which asphalt becomes rough in texture due to a loss of aggregate.

Ravelled surfaces require binder to be added. The rate of application depends on the amount and condition of the existing binder.

There are two conditions:

(a) Minor ravelling (less than or equal to 30% of pavement area)

- Apply a fine seal
  - or
- Apply a slurry surfacing
  - or
- Apply an enrichment treatment followed by sanding
  - or
- Apply dense graded asphalt

(b) Extensive ravelling (greater than 30% of pavement area)

Resurface with dense graded asphalt.

In speed zones greater than 60 km/h,

ensure that the dense graded asphalt has sufficient surface texture depth for high speed skid resistance and to reduce the likelihood of aquaplaning,

or

control the traffic speed until the wearing course of open graded asphalt or a sprayed seal has been placed.

Fatty or Slick Surfaces

A fatty surface is due to surplus binder on the surface. Fatty surfaces become soft in hot weather (bleeding) and slippery in wet or frosty weather. Slick surfaces are oxidised fatty surfaces and are hard, smooth and slippery.

Possible methods of pretreatment are:

- Apply a fine seal

Where the amount of free binder is excessive, sealing is not appropriate. Slurry surfacing may be suitable for slick surfaces. Seek specialist advice.

or

- Remove the affected asphalt surface by milling and resheet with asphalt
  - or
- Remove, remix and replace the affected asphalt surface by hot or cold in situ recycling

Care should be taken in the hot recycling operation to avoid fire and excessive fuming.

or

- Apply bitumen hardener and sand to the affected area
Burning off excess binder from a bituminous surface is environmentally undesirable and this technique should not be used.

Shoving

Shoving is a regular waviness that can develop in an asphalt surface due to movement under traffic. The deformations are usually shallow and are not likely to be confused with larger depressions resulting from weaknesses in the pavement or the subgrade.

Method of pretreatment is:

Remove the unsound material and replace it with asphalt or slurry surfacing depending on the depth required. For depths less than 15 mm, use AC5 dense graded asphalt or 5 mm slurry seal and for depths of 15 to 30 mm, use AC10 dense graded asphalt or 10 mm microsurfacing.

Rutting

Rutting usually takes the form of depressions in the wheeltracks. If the deformation is accompanied by adjacent bulging of the pavement or shoulder surface it may be a sign of excessive subgrade movement or weak pavement.

The methods of pretreatment are as those described for "shoving" provided there is no subgrade movement. Any faulty subgrade material must be replaced by a suitable material.

Cracking

An asphalt surfacing may crack for a variety of reasons and often, in the early stages, the crack pattern can indicate the cause.

When the cracks have developed over a large area and become sufficiently wide and numerous to allow the entry of surface water or disturbance of the surfacing by traffic it may be difficult to determine the original cause.

Methods of pretreatment are:

- Width of cracks

  Cracks wide enough to be treated should be filled with cutback bitumen or bitumen emulsion.

  The surface is then lightly sanded to prevent traffic picking up surplus binder.

  It is important that the binder penetrates the cracks and does not bridge across the crack at the surface.

  Wider cracks should be filled with a bituminous slurry (of fine aggregate and bitumen emulsion) or rubber bitumen joint sealant if sufficiently wide.

- Distribution of cracks

  Large areas with fine cracks should be spray sealed, slurry sealed, or resurfaced with asphalt (subject to pavement design considerations).

Pot Holing

The edges of the pot hole should be trimmed vertically and any loose material removed prior to reinstatement. Then apply an emulsion tack coat to the exposed surface, add fresh asphalt and compact.

When treating an open graded asphalt surfacing, open graded asphalt mix must be used to match the existing surface.

For heavily trafficked roads, further pretreatment with an asphalt overlay or a double/double seal may be required.

Gouging from Snow Ploughs or Tyre Chains.

In snow prone areas, aggregate can be lost from an asphalt surface by gouging from snow ploughs or tyre chains.
### Pretreatments for Asphalt Surfaces

**Legend:**

- **Suitable**
- **Suitable with conditions as noted**
- **Not applicable**

**Notes:**

1. 7 mm seal.

2. On roads with speed limit > 60 km/h, control traffic speed until the sprayed seal is applied.

3. On roads with speed limit > 60 km/h, either ensure that dense graded asphalt has sufficient surface texture for high speed skid resistance and to reduce the likelihood of aquaplaning, or else control traffic speed until the sprayed seal is applied.

4. Enrichment followed by application of sand.

5. Suitable only for slick surfaces. Note 2 also applies.

6. Must be followed by sanding and the traffic speed controlled for period of up to 2 weeks thereafter. Note 2 also applies.

<table>
<thead>
<tr>
<th>CONDITION OF ASPHALT SURFACE</th>
<th>Seal</th>
<th>Binder hardener + sand</th>
<th>Enrichment</th>
<th>Rejuvenation</th>
<th>Slurry surfaced</th>
<th>Dense graded asphalt</th>
<th>Remove and replace with slurry surfaced</th>
<th>Rubber joint sealant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cracking</td>
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**REMEDIAL TREATMENTS AND PRETREATMENTS**
Methods of pretreatment are:

(a) Sound pavement, minimal aggregate loss
   - Apply an enrichment treatment or
   - Apply a rejuvenation treatment

All of the pretreatments must be followed by sanding and the traffic speed controlled for a period of up to 2 weeks thereafter.

(b) Sound pavement, excessive aggregate loss
   - Apply an asphalt overlay or
   - Apply slurry surfacing

In areas where the speed limit is greater than 60 km/h, all of the above pretreatments must be followed by a sprayed seal within two weeks of application and the traffic speed controlled until the seal has cured.

7.5 PRETREATMENT OF CONCRETE SURFACES

Repairs to concrete pavements should be carried out in accordance with the RTA Concrete Pavement Construction Manual.

Care should be taken when sealing over new or old concrete pavements. It is essential to obtain a good bond between the concrete surface and the subsequent sprayed seal, particularly if a polymer modified bitumen binder is used.

On newly constructed concrete pavements, the type of curing compound can have a marked effect on bond development as can a dirty or oily pavement. Successful removal of curing compounds can be difficult - seek specialist advice.

The procedure to be followed when sealing over concrete pavements is as follows:

New Concrete Pavements

- With no curing compound or the curing compound removed:
  Tack coat the area with a cutback bitumen applied at a residual binder application rate of 0.05 L/m². Alternatively, a fast drying primer/bonding agent may be used to reduce the time before sealing.

- With hydrocarbon resin or waterborne curing compounds:
  C9 hydrocarbon resin is unsuitable for use with bitumen and must be removed by sand blasting, shot blasting or grinding the concrete.
  C5 hydrocarbon resin will oxidise under ultraviolet light in 45 to 55 days. If the surface is to be sealed prior to 45 days, then it must be removed using a suitable method.

- With wax emulsion:
  Wax emulsion curing compound is unsuitable for use with bitumen and must be removed by sand blasting, shot blasting or grinding the concrete.

Old Concrete Pavements

- With a relatively clean surface
  Apply a fast drying primer/bonding agent at a rate of 0.05 L/m² (residual).

- With a dirty, oily surface
  Clean the surface by brooming and water blasting using a detergent solution to remove as much dirt and oil as possible. Allow the surface to dry before applying a tack coat of fast drying primer/bonding agent at a rate of 0.05 L/m² (residual). These agents cure faster than conventional cutback bitumens and markedly reduce the curing time before sealing.

Once the tack coats have cured, a sprayed seal (using any binder) can be applied.
7.6 PRETREATMENT OF TIMBER SURFACES

Pretreatment for timber bridge deck surfacing depends on:

- type of timbers - hardwood, softwood, plywood
- treated or untreated
- type of treatment
- length of curing
- type of surfacing - stress laminated, marine ply, etc.

- surface finish - planed, smooth, uneven 'piano key' effect, etc.
- load considerations
- need for waterproofing
- finished surface treatment (e.g. seal or asphalt)
- traffic volume and composition

In view of the above, selection of a suitable pretreatment is still an evolving technology and therefore specialist advice should be sought.

Stripped seal caused by blocked nozzles

Photograph 7.1

Extensive stripping

Photograph 7.2

Stripping and aggregate breakdown

Photograph 7.3
Ravelling
(asphalt surface)

Photograph 7.4

Fretting

Photograph 7.5

Broken edge seal

Photograph 7.6