CHAPTER 9. ROAD PAVEMENT REPAIRS - RIGID PAVEMENTS

9.1 INTRODUCTION

Most repairs for rigid pavements require specialist attention and are outside the scope of routine maintenance. This applies particularly to such measures as concrete repairs, the treatment of stepping or faulting and actions where joints need extensive treatment.

Other routine maintenance operations within the road reserve such as drainage, guardrails, fencing, clearing, signs, rest areas, erosion control and soil/rock problems are common to both rigid and flexible pavements.

Because the Route Manager will be familiar with all aspects of the pavements on his route, observations regarding actions that need specialist attention are important. Thus at least once a year a report should be submitted to SANRAL on the condition of the rigid pavements, noting such problems as stepping, faulting, extensive problems with joints (loss of seal or spalling), badly cracked panels, distress due to alkali/aggregate reaction, severe surface abrasion or any other points of concern such as poor ride or poor drainage.

Experience indicates that the following maintenance actions should be carried out on rigid pavements by the routine maintenance Contractor. The use of asphalt for these maintenance actions is temporary. When sufficient work is required to justify a separate specialist repair contract, SANRAL should arrange for this to happen.

9.2 LOOSE/SPALLED CONCRETE

Description

Loose/spalled concrete is the breaking up of the rigid pavement predominantly either side of joints and at slab corners. Distress can occur at the edges of the slab and in isolated cases in the centre of the slab.

Causes

- Joints which have lost their seal and pumping of fines has occurred which in turn has caused stepping/faulting.
- Joints with inadequate load transference resulting in cracking of the adjacent concrete under heavy vehicle loads.
- Alkali/aggregate reaction in the concrete.
- Localised poor quality concrete.
- Pop outs of concrete within the slab.
**Extent**

*Isolated:* Localised failures occurring at random positions.

*Intermittent:* Where there are a number of failures, for example at problem joints.

*Extensive:* Particularly where there are widespread problems at joints or where there is alkali/aggregate reaction. This is too extensive for routine maintenance and must be referred to SANRAL for periodic maintenance.

**Response Time**

Loose or spalling concrete creates a significant hazard for road-users and requires urgent attention. Areas where there are already holes can be handled on a routine basis provided that all the loose material has gone and that the ride is not seriously affected.

**Repair Methods**

Remove all loose material. Where the adjacent concrete is cracked and it is likely that this will fail in the short term this should also be removed.

Do not remove material unnecessarily or turn a small repair into a large one without good reason.

Thoroughly clean the concrete using compressed air and wire brushes. Fill the spalled area with asphalt and make sure that sufficient loose asphalt is placed (required thickness plus 40%) such that good compaction can be achieved. Compact the asphalt to just above the existing road surface (0 to 5mm) as experience shows that some compaction of the patch always occurs under traffic.

Where adhesion problems between the asphalt and concrete are experienced, treat the concrete with a light application of creosote, allow it to dry/cure and then tack with a modified emulsion before placing the asphalt.

**Caution**

Do not attempt a concrete repair. This requires specialist knowledge and experience and should be undertaken through special maintenance contracts.
9.3 JOINTS/OPEN CRACKS

Description
Open joints where the seal has failed or cracks which are sufficiently open so that grit and water can penetrate.

Causes
- There are a number of reasons for joint seal failures such as ageing of sealant, sealant poorly or incorrectly applied, debonding of neoprene strips and inappropriate sealant.
- Open cracks can occur for a variety of reasons including poor subgrade support and settlement.

Extent
Problems with joint seals can vary from isolated to extensive. Where failures are extensive it is recommended that this should not be handled under routine maintenance but referred to SANRAL for periodic maintenance.

Response Time
A large number of rigid pavement problems relate to poor performance of the joints. It is therefore important to maintain the joint seals to keep out both grit and water. Thus at least once a year the joints should be inspected and any faulty seals repaired.

Repairs
Remove all loose material and any old sealant. Clean thoroughly (where appropriate by sandblasting) and blow clean with compressed air.
The use and application of all sealants must be confirmed with SANRAL and the suppliers prior to the work being undertaken.

Note: The treatment of cracks between concrete and adjacent flexible shoulders is given under Passive Long Cracks in the section on flexible pavements.

Caution
Overfilling the crack or joint will result in excess filler smeared on the road surface which is both wasteful and unsightly. Desirably sealing of joints or open cracks should be undertaken by a specialist contractor.
9.4 WEEDS

Description
Weed growth occurs in the pavement joints particularly close to the shoulder.

Causes
- Failure of the joint seal allows the collection of grit, soil and seeds.
- Proximity to a gravel shoulder containing weeds.

Extent
The extent of weeds growing in joints varies from isolated to extensive.

Response Time
Weed treatment can be attended to on a regular routine basis.

Repairs
Treat the weed growth carefully with an approved herbicide applied by a Certified person. Allow the weeds to die and then remove all growth. Where the joint seal has been damaged or is no longer effective carry out repairs as recommended under Joints/Open Cracks.