

COMMENTARY: PART R37 CRACK SEALING

The following notes are intended to provide guidance to DPTI personnel on the application of this specification. They do not form part of the contract.

1. General.

This commentary has been developed in conjunction with the crack sealing contractors in South Australia, and requires the Sealing Type to be clearly specified.

There are two main types of contract that this specification is prepared for:

- Maintenance Contracts where Type A treatment is used with emulsion application and gritting,
- Specialised Crack Sealing Contracts where Types B & C are used with Hot Pour sealant products (refer to clause 2 for an example of a Works Schedule).

A Contractor must meet the performance requirement of skid resistance in this specification, and be pre-qualified with DPTI. A register of pre-qualified companies is available from the following internet site: <http://www.dpti.sa.gov.au/documents/contractsandtenders/prequalification>.

Pre-qualification will be specific to an approved bituminous sealant and sealing treatment type (including whether the application of grit is required). A letter from DPTI outlining these requirements must be provided by the contractor prior to the commencement of work.

2. Works Schedule.

The following information is required to be scheduled for specialist crack sealing contracts:

- Road name and segments,
- Sealing technique (Types B & C),

TYPICAL SCHEDULE

Item	Road Name	Lane	Start Point	RRD	End Point	RRD	Total Length (km)	No. Lanes	Sealing Type
1	RN6212 Anzac Hwy	South	Greenhill Rd	0.81	South Rd	2.42	1.61	3	B
2	RN6143 Dequett. Tce	West	Bartels Rd		Wakefield Street		0.5	3	C*

* Clipsal Race Track.

3. Selection of Crack Sealant Treatment Type.

A flow chart is provided at the end of this commentary. This chart considers the following issues when selecting a crack sealant technique:

- Seal Type,
- Expected Life of Surfacing prior to re-treatment,
- Crack width,
- Crack activity,
- Crack Filling technique,
- Skid resistance,
- Gritting.

Type B is considered to be the most cost effective crack sealing treatment, but will depend on wearing course type and quality.

Type A: Flush Seal without Routing

This is the standard technique used for Maintenance Contracts where the sealant product is an emulsion.

The emulsion is sprayed or poured over the crack and a squeegee maybe used to spread sealant over surface and into crack. Gritting is required if skid resistance is less than 0.45.

Type B: Overbanding without Routing

This is the standard technique used for the Specialist Crack Sealing Contracts where the sealant product is a Hot Pour bitumen. The sealant is based on C170 bitumen with the addition of an elastomer and/or crumbed rubber. Overband thickness is expected to be between 2 and 3 mm thick.

The sealant is sprayed or poured over the crack and should not be allowed to be spread with a squeegee or similar device unless it can be demonstrated that a thin overhand is suitable for the conditions. Generally is only required when PMB is used and if skid resistance is less than 0.45.

Type C: Flush Seal with Routing

This technique is used for Crack Sealing Contracts for those roads where the cracks are considered to be active with large movements between each side of the asphalt surface cracks. Also for those surfaces used as racetracks (eg Clipsal), as the routing provides a reservoir of sealant below the wearing course surface. Sealant is as for type B.

The routed crack shall be filled by spraying or pouring sealant to be level with the surface, and any excess must be levelled with a squeegee such that no sealant is proud of the surface, a slight depression is achieved, and any excess is evenly spread over the surface.

Routing is best used for relatively straight cracks such as longitudinal and transverse cracks, as chasing random cracks is relatively difficult. The asphalt surface to be routed should also not be too old, as brittle asphalt will easy break away creating large gaps for filling with sealant.

4. Bituminous Sealant.

The sealant that is best able to provide flexibility as the pavement moves (under environmental stresses) is the elastomer binder with crumb rubber added. The crumb rubber seems to enable the sealed surface to be trafficked soon after placement without being picked up (by tyres). In addition, from initial skid resistance testing carried out so far, no gritting is considered necessary when crumb rubber is added.

It is specified that all hot sealants should be based on C170 binder, however, should an alternative be sought to be used, the Department should be notified and approval sought based on meeting the requirements of Clause 225.9.3 "Sampling and Testing for Crack Sealant".

Other binder types, such as elastomer modification of bitumen, is suitable as a flexible sealant, however, gritting is necessary to prevent pick-up and to achieve adequate skid resistance.

Emulsion treatment of cracks with gritting is carried out in routine maintenance contracts.

5. Blinding / Gritting.

The application of grit is to ensure that minimum skid resistance is achieved by the sealant as if it was the only surface the tyre was in contact with. However, gritting creates it own short term low skid resistance issues (several days) depending on the amount of free material on the adjacent pavement and should be avoided if possible.

6. Terminology.

Bandaid	The flat shape of sealant on an asphalt wearing course such that it covers the crack in the asphalt with some filling as well and prevents the ingress of moisture by adherence to existing asphalt.
Blinding	Blinding or gritting is the application of sand or grit sized particles to ensure the top of the sealant has sufficient skid resistance of its own, and may or may not be required to meet the minimum skid resistance intervention level.

- Flush Flush means the sealant has been scraped such that a thin film remains which will rapidly be worn away by traffic.
- Routing The mechanical removal of asphalt to a set rectangular groove for filling with sealant.
- Squeegee A semi-circular shaped piece of rubber on a handle that can be used to shape the sealant to an even thickness over the pavement surface.

7. Inspection of Crack Sealing.

A table to be filled in at the conclusion of each section of work is attached for the benefit of both DPTI and the contractor. This information should form part of the feedback to Contracting and Procurement's Contractor assessment as part of TSA's contractor prequalification.

8. Crack Sealing Flow Chart.

A flow chart for selection of crack sealant type is attached.

9. Additional Information.

RTA (NSW) have prepared the following additional test procedures that have not yet been considered, however, should problems occur through a contract they may be used to assist in problem resolution.

Test Method Number	Test Method Description
T1170	Preparation of Hot Poured Joint Sealing Compound for Test
T1171	Flow Properties of Hot Poured Joint Sealant
T1172	Tensile Bond Strength Test For Hot Poured Joint Sealant
T1173	Heat Degradation Test on Hot Poured Joint Sealing Compound
T1174	Fuel Immersion Test For Fuel Resistant Hot Poured Joint Sealing Compounds
T1175	Application Life of Cold Applied Joint Sealing Compound
T1176	Flow Properties of Cold Poured Joint Sealant
T1177	Hardness of Cold Applied Joint Sealing Compound
T1178	Adhesive Strength intension of Cold Applied Joint Sealing Compound
T1179	Penetration into Joint Sealant
T1180	Resilience Test For Hot Poured Elastomeric Joint Sealants
T1181	Extension Test For Hot Poured Joint Sealant
T1192	Adhesion of Sealant
T1193	Accelerated Ageing of Cured Sealant
T1194	Loop Sealant Encapsulation Test
T1195	Tack Free Time of Sealant

Pavement Type

Expected Life (prior to overlay)

Crack Width

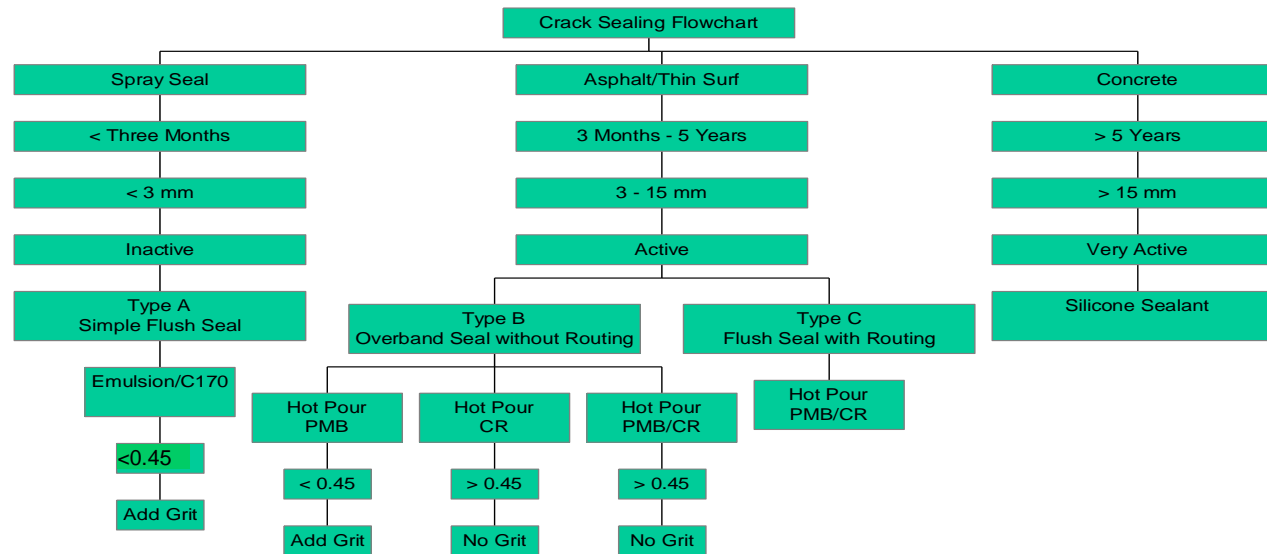
Assumed Crack Activity

Crack Filling Technique

Crack Sealant Material

Skid Resistance Achieved

Gritting?



•All cracks must be cleaned (air blown) prior to application of crack sealant