PERFORMANCE LEVELS FOR SURFACE TEXTURE

INTRODUCTION

In 1999/2000 VicRoads undertook a research project aimed at developing Performance Levels for Surface Texture on low traffic roads (<600 vehicles/lane/day).

The project addressed this by:

- Studying a number of low traffic sprayed seal pavements
- Assessing the relationship between pavement texture and crash rates on some rural highways (essentially sprayed seal surfaces) and some urban highways (essentially asphalt surfaced).

AIM OF INVESTIGATION

The aim of the project was to obtain performance limits for texture using a number of criteria as follows:

- An upper limit above which stripping of the seal would have a high risk
- A lower limit below which flushing of the sprayed seal would be a high risk
- A lower or an upper limit where there was a marked increase in the risk of crashes.

MINIMUM TEXTURE LEVEL STUDY

Sprayed Seal Network: The project investigated:

- A number of published reports which suggested performance texture levels based on:
  1. Reduced skid resistance with speed
  2. Increasing crash rates
  3. What was practically achievable
- Possible practical performance limits based on the lowest 5th percentile of the texture level across the sprayed seal network
- A small part of the Victorian rural, essentially sprayed seal, network that showed texture levels where there was possibly an increased crash risk.

The research indicated an increased risk of crashes when surface texture was low and this determined a desirable long term lower limit of texture. The results of this part of the investigation are shown in Figures 1 and 2 attached.

Figure 1 is a graph of:

1. Surface texture versus percentage of the network with that texture
2. Surface texture versus percentage of network crashes that occurred at that particular surface texture.

Figure 2 is a graph of surface texture versus the difference between the percentage of the network with that texture and the percentage of network crashes that occurred at that particular surface texture.

Based on the above considerations, and other research carried out in the project, the minimum performance limits shown in Table 1 were developed. This performance level could be considered for inclusion into future performance based contract.

Seal Size	**Minimum Performance Limit**	
	Early life (Within 3 years)	Later life
7mm Seal	1.2mm[1]	1.2mm[1]
10mm Seal	1.4mm	1.2mm[1]
14mm Seal	1.6mm	1.2mm[1]

Table 1

[1] Determined by an apparent increase in crash rate rather than a practically determined field texture.

Asphalt Network: As part of the texture/crash study on the sprayed seal network, a small investigation of the asphalt network was undertaken. The results of the surface texture with the location of crashes on the urban, essentially asphalt, network showed that:

- There was not a significant relationship between crashes and texture for those roads.
- The range of texture in this network was limited to generally 0.4 to 1.1mm.

MAXIMUM TEXTURE STUDY

The investigation of a number of low traffic volume rural roads did not determine a level of texture that was related to stripping. It was therefore not practical to nominate a maximum performance limit for texture of sprayed seals at

this time.

OTHER FINDINGS

The investigation indicated that on low traffic roads:

- The surface texture results on the sampled Victorian roads were higher than those found in the Austroads long-term seal design performance trials. It would appear that physically, additional binder could be accommodated in the Victorian sprayed seals for low volume roads. The data however does not suggest that this would result in a longer seal life.

- The binder application rate did not appear to be related to surface distress for 10mm and 14mm seals. There was insufficient information to draw a conclusion for 7mm seals.

- The 10mm and 14mm seal data generally indicated that seals with long lives had lower binder application rates. However, this finding may only apply to seals on low trafficked roads that have been in service for a minimum of five years.

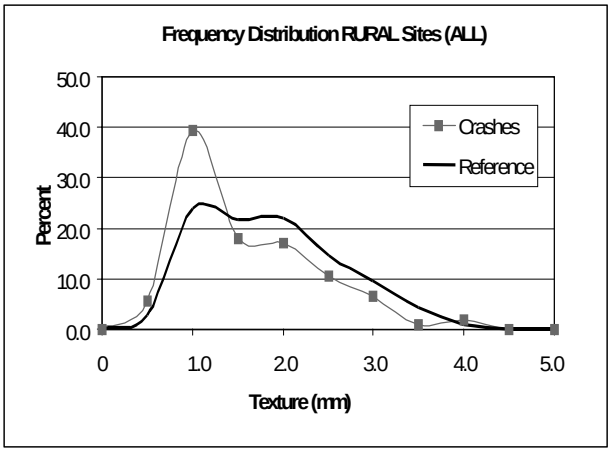

Figure 1: All Crashes versus Texture based on Percentage of the Rural network

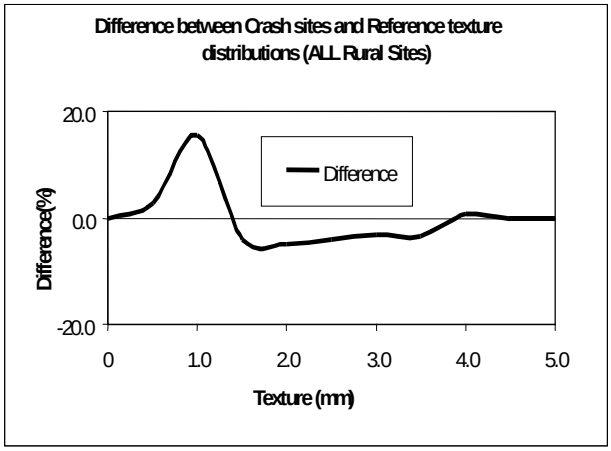

Figure 2: All crashes based on Percentage difference (between Percentage of Network crashes and Percentage of Rural Network with that texture) versus Texture.

REFERENCE

VicRoads Corporate R&D 784 - Performance levels for Surface Texture to maximise surface life.

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