

USE OF SURFACE TEXTURE DATA IN RAS

INTRODUCTION

This note describes the potential use of texture data that is stored in the VicRoads Road Asset System (RAS).

TEXTURE DATA AVAILABLE IN RAS.

The texture data stored in RAS has been converted to equivalent sand patch (volumetric) texture depth. The measurements stored in RAS are:

- Left wheel path (LWP) surface texture
- Between wheel (BWP) paths surface texture

The data has been measured by the profilometer at 50mm intervals but has been aggregated to average 100m segment values for storage in RAS and for reporting purposes.

Data is available for 1994 for the entire declared road network (apart from newly declared road sections). For the year 2000 the coverage is the declared roads in Northern, North Eastern, Metropolitan North West and South Western Regions. The data from the balance of the VicRoads regions has been collected in 2001.

EXTRACTING DATA VIA RAS.

General: Data can be obtained from the following RAS application menus:

- Project Graphing
- Network Reporting
- Project Reporting

Project Graphing: For an individual road the following variables (user columns) can be plotted:

- Average left wheel path surface texture
- Average between wheel paths surface texture
- Percentage texture loss between wheel paths

Network Reporting: The average values of the variables listed above under the project graphing application can be extracted for each road section defined for the network report. The texture values reported are averaged over the complete road length. The program output can be printed or exported to a text file.

Project Reporting: The average values of the variables listed above under the project graphing application can be calculated for any portion of a road or roads defined under the project addition procedures. Project queries can also be used to list data from the 100m stored segments on all or part of any road by the user specifying a texture level ≥ 0 . This will produce a listing of texture on all 100m road segments. The program output can be printed or exported to a text file.

Texture can also be extracted by running SQL Queries directly on the database. SQL Queries can be written by Information Services and are not available from the RAS application menu.

Location Accuracy: The data is located by the State Road Referencing System (SRRS) chainage that can also be translated to distance past selected reference markers including intersections and km posts. Because of the elastic banding of road length measurement and discrepancies following data collection, the location accuracy of the data for any road feature is probably only accurate to within 50m to 100m.

RAS TEXTURE DATA AND OUTPUTS

General: The surface texture data:

- Can give an indication of the adequacy of the texture of the pavement if the type of surfacing used on the pavement is known (it is usually available from the pavement diary and Surface Inspection Rating module).
- May indicate long lengths of potentially flushed sprayed seal where there could be an increased risk of accidents if there are low surface textures in the LWP or large differences between the surface texture in the LWP and BWP.

Metropolitan Area: In the metropolitan areas, and some rural areas, the surfacing generally will be asphalt. The type of asphalt and the likely surface texture readings are shown in Table 1.

Rural Area: In the rural area (except built up towns) the surfacing of the pavement generally will be a sprayed seal. The texture of sprayed seals is dependent on:

- The size of the aggregate used in the sprayed seal.
- The amount of flushing present.

The surface texture data has been collected and is available for analysis at 100m segments only. This data can only be used to broadly show extensive areas of flushing.

The influence of the size of sprayed seal on the likely surface texture readings are shown in Table 2.

Network data: The data collected is averaged over 100m segments and therefore can only be used broadly to indicate potential issues. The data cannot be used for sprayed seal design or for any other purposes requiring accurate data over very short lengths.

Use of other data: Generally surface texture data averaged over 100m segments gives an indication of the surface condition however site inspection and the following data should be considered to obtain a full picture:

Surface Inspection Rating Procedure data, especially the data associated with Surface texture loss and binder level

- Accident records
- The measured skid resistance in the vicinity

INTERPRETATION OF TABLES

Table 1 and 2 use the concept of Investigatory Level of texture and the need to determine the significance if the level of texture is above or below the tabulated value. For example a site investigation could be considered if:

- The texture in the area being considered is below the level quoted in the tables because it is possible that the texture is less than desirable
- The difference in texture between the LWP and BWP:
 1. Is outside the limits given as this may indicate patching with asphalt, excessive compaction of asphalt or flushing in sprayed seals
 2. Changes rapidly as it may indicate patching or potential flushing or fullness of a seal

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Figure 1: LH wheelpaths flushed, this would be indicated by low textures in RAS outputs.

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TABLE 1: Texture properties for surfaces generally found in urban area

Surfacing type	Comment	Expected texture (mm)		Investigatory Level		
		Range LWP	Difference (LWP and BWP)	Level of LWP texture	Difference between LWP and BWP ¹	Comment
Dense Grade Asphalt	Most common surfacing	0.5 to 1.5	Up to 10 to 20%	<0.6mm	a) >20% b) Rapid changes c) <0%	1) Low textures may indicate an increase 2) Rapid changes may indicate patching
Stone Mastic Asphalt	Relatively uncommon	1.0 to 1.5	Up to 10 to 20%	<1.0mm	a) >30% b) Rapid changes c) <0%	3) Excessive differences between the may indicate compaction of the mat
Ultra Thin Open Graded Asphalt (UTOGA)	Fairly common.	1.0 to 2.5 ²	Up to 20%	<1.2mm	a) >20% b) Rapid changes c) <0%	1) Excessive differences between the may indicate compaction of the open 2) Rapid changes may indicate patching
Open Graded Asphalt	Common on Freeways	1.0 to 2.5 ¹	Up to 10 to 20%	<1.2mm		3) Low positive differences between indicate clogging of the open graded
Slurry surfaces	Relatively uncommon	0.4 to 0.8	Unknown	<0.6mm	>20%	Low textures may indicate an increased
Concrete Surfaces	Relatively uncommon	Insufficient data.		Insufficient data.		Low textures may indicate an increased

Note: LWP - Left Wheel Path,
BWP - Between Wheel Path

¹ Difference = (LWP - BWP)*100/LWP

² This measure of surface texture is not really equivalent to the sand patch measurement due to the high air voids in this type of asphalt.

TABLE 2: Texture properties for sprayed seals (generally rural environments)

Seal size	Comment	Expected texture (mm)		Investigatory Level		
		Range LWP	Difference (LWP and BWP)	Level of LWP texture	Difference between LWP and BWP ³	Comment
14mm	Most common type of seal	2 to 3mm	10 to 30%	1.5mm	a) >20% b) Rapid changes	1) High difference 2) Low textures m accidents 3) Significant var flushing and a accidents.
10mm		1.5 to 2.5mm	10 to 30%	1.5mm		
7mm	Can be common on very low traffic roads	1.0 to 1.5mm	10 to 30%	1.0mm		
14/7 or 10/5mm double application	More common in built up areas	1.5 to 2.5mm	10 to 20%	1.5mm		

³Difference = (LWP - BWP)*100/LWP