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Network Operations Division Memorandum No. NetO 1/05

Subject: **Macrotexture Requirements for Surfacings**

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1. Purpose

This memo is to advise a relaxation of macrotexture requirements for low speed areas. It supersedes the two earlier Asset Management memos and is to be read in conjunction with Specification T/10 (with notes), and the Exception Report instructions (for skid resistance) issued following the High Speed Data Collection Survey.

It applies to maintenance of existing surfacings, resurfacing or new construction. These requirements will be added to a transit specification shortly.

The term Macrotexure is abbreviated to texture in this memo. Microtexture is always named in full.

2. Macrotexure Requirements

Texture for all surfacings shall be in accordance with Table 1, and as detailed in this memo

Table 1; Macrotexture Requirements for State Highways

Macrotexture (MPD mm)	**New Surfacings**	**Existing Surfacings**
[e.] **Urban;** legal and operating speed equal and less than 50kph	**0.5**	**0.5**
Urban; legal speed less than 70kph	**0.7**	**0.5**
Rural; legal speed 70kph or greater	**0.9**	**0.5**

Further to the table above:

a. New surfacings include retexturing such as waterblasting or mechanical abrasion.

b. The requirement for higher texture on new surfacings is to allow for reductions in texture with time and a tolerance above minimum values. The reduction in texture will always occur with chipseals, and may occur with asphaltic mixes.

c. For assessment of texture for new surfacings, the total area is to be divided into lots. A lot is any area of surfacing laid in one day, with a maximum size of one lane wide and 200m long.

The preferred method of measurement of texture is a laser based direct measurement of MPD, measuring both wheelpaths for the full length. Where it is obvious texture is lower outside these lines an attempt shall be made to measure along the lines of lower texture.

For new surfacings texture is to be averaged over successive 10m long lines. For acceptance of the new surfacing:

i. No more than one 10m average texture may fall below the values for new surfacings in the table 1.

ii. And no 10m average will fall below the texture requirement for existing surfacings.

iii. Where the resurfacing has a short life (eg grade 6 chipseal), or the texture is expected to be stable the Transit Job Manager may allow relaxation to the requirement for new surfacings in i. above.

Where equipment for continuous measurement of texture is not readily and economically available the following methodology may be used:

i. Identify by visual inspection the three 10m longitudinal lines with lowest average texture.

ii. Measure with several spot readings the average texture along all three lines.

iii. Requirements for texture are as for continuous measurement in i. to iii. above.

d. Existing surfacings shall be evaluated by two methods;

- Following the annual High Speed Data Collection Survey any 10m length with texture less than the values specified in the table 1 shall be investigated and, if required, treatment programmed.
- During periodic inspections any large areas of existing surfacing that appear to have very low texture (well below the requirements for existing surfacing in Table 1), or a high risk of bleeding, shall be investigated and, if required, programmed for treatment.

e. Where the speed of all vehicles is close to 50kph a texture of 0.5mm or less may be acceptable from time of construction. Factors to consider are:

- Operating speed of faster vehicles, say 99percentile. (Loss of skid resistance, on wet roads, is progressive with increasing speed. Skid resistance is a maximum at around 20kph. It reduces continuously with increasing speed. At a speed of 50kph the reduction in skid resistance is small. At 70kph loss of skid resistance is significant.)
- How far below 0.5mm is the texture? (Low texture surfacing has a higher rate of loss of skid resistance.)
- Crash rate compared to similar sections of SH.
- Wet versus dry crash rate. Ie; if dry crash rate is lower than wet crash rate, treatment to improve skid resistance should be considered.

f. These texture requirements are in addition to any requirements in other specifications. For example most chipseals have texture well in excess of these requirements when new.

3. Available surfacings

Well designed surfacings using the following mixes will meet the texture requirements in the Table 1: Chipseals, OGPA, macadam mixes, SMA, UTA. Evidence of acceptable performance shall be confirmed before considering the following mixes, Mix 20, dense asphaltic concrete (e.g. TNZ M/10), Mix 10, slurry, and bitumen rich mixes (eg British hot rolled asphalt without added chippings)

4. Grooving etc

Any stable mix may have the texture increased by grooving. Longitudinal grooving is quieter, but the hum of transverse grooving may be eliminated by random spacing of the grooves. A memo on transverse grooving will be issued shortly.

Longitudinal grooving may not be measured adequately by laser measurements in the longitudinal direction (As used in the High Speed Data Collection Contract). A visual check is normally adequate to confirm adequacy of longitudinal grooving. In cases of doubt a sand circle test may be carried out or laser measurements made transverse to the direction of the grooves.

Waterblasting will also increase texture.

Both waterblasting and grooving may be used for maintenance of existing surfaces, repair of defective construction or as an integrated part of the design of new mixes.

5. Choice of Surfacing

For new surfacings and maintenance of existing surfacings the option chosen shall be the most economic long term with materials (mixes) available in the region that will meet all design requirements.

6. Noise

In some instances Resource Consent has required use of OGPA or other named surfacings. This should be avoided where possible and a description like low noise surfacing used to enable economical choice of surfacing type.

7. Spray

At present there is no economic data to justify laying mixes specifically designed for high spray suppression. Where plant is available to produce SMA this should be considered as the first option for surfacings requiring a durable asphaltic mix.

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