



Introduction

The Skid Technical Advisory Group (STAG) is a working group of technical experts who develop, review and guide skid resistance initiatives in the NZ Transport Agency's Highways and Network Operations group. The STAG has a Terms of Reference, soon to be tabled at VAT Asset Management for endorsement.

Our membership includes: Dave Whitehead (Convenor), David Cook, Joanna Towler, Mark Owen, Colin Brodie, Gordon Hart, Murray Clarke and Terry Boyle.

We have developed a five-year strategy, identifying areas of our business that require improvement. Topics being investigated include HSD (SCRIM), texture measurement, information dissemination, upskilling our staff and suppliers, specification/policy development, materials research, data analysis and crash savings. Read on to find out more.

Out of Context curves - version 2

The concept of Out of Context (OoC) curves was initiated in 2007. It was based around identifying below 500mR curves on the state highway network and rating these in terms of risk based on the difference between the approach speeds and curve speeds (a measure of 'out of contextness'). Networks were encouraged to use this information to investigate higher-risk curves and consider safety improvements where necessary, such as modifying the skid resistance investigatory level, improving signage, widening shoulders and removing hazards. Over the last couple of years, safety retrofit money has been allocated specifically to address OoC curves.

Over the last two years, we have been refining the OoC curves identification and rating process. With the aid of various consultants and statisticians, we have developed a process for identifying and 'fixing' the coordinates and reference

positions for the starts, ends, length, radius and speed of all curves below 500mR. We have also developed a crash prediction model for these curves based on a combination of the geometric elements of the curve itself and its out of contextness using the approach speed. This is being used to assign a revised risk rating to the curves with an appropriate skid resistance IL assigned, such as 0.55 for high-risk curves, 0.5 for medium-risk curves and 0.4 or 0.45 for low-risk curves. The curves and the appropriate default IL will eventually be 'hard wired' in RAMM. The IL values will be able to be altered at a regional level, if appropriate, following a detailed and documented investigation process.

A trial of the procedure and the implications of this are to be carried out in the Rotorua and Hawkes Bay areas this summer, and if successful it will be rolled out nationwide in 2010.

3rd International Surface Friction Safety Conference

We are delighted to announce the 3rd conference is to be held in Queensland, Australia in 2011.

The NZTA/WDM and ARRB have joined forces to coordinate this exciting event, which builds on the previous two conferences in Christchurch in 2005 and Cheltenham, UK in 2008.

We will be looking at some exciting skid-related activities, including a day at the vehicle test track in Brisbane, new technology displayed, and international leading-edge experts sharing their discoveries.

We encourage you to start preparing abstracts and take the opportunity to promote the effective safety work New Zealand is conducting relating to improving road surfacing, with demonstrated reductions in loss of control type crashes.

This three-day event is not to be missed - the previous two have uncovered new and innovative technologies and produced an excellent forum for sharing ideas and networking.

Looking forward to seeing you in Brisbane - September 2011.

Coming soon to a Network near you...

Skid resistance technical reviews

Over the last nine months, we have been carrying out skid resistance reviews across the country. Full details will be issued in an upcoming memo and incorporated into the revision of T/10 but here are some of the main lessons learnt and recommendations flowing from these reviews:

Exception Report

- a. **Everyone wants their data earlier.**
Should you be a special case, National Office will be pleased to assist.
- b. **Assessment of the Exception Report data and programming treatment.**
All regions visited have a process for reviewing the treatment required to provide a reasonable programme.
- c. **Tracking completion of treatments from Exception Report.**
Regions **must** have a system to enable tracking of progress of

treatments at each individual site and reporting to contract meetings.

- d. **Initial survey overview by regions.**
At the Exception Report stage, a short regional report should be written that summarises reasons for low skid resistance, to give confidence that skid resistance is being managed.

Actions required following issue of full RAMM database

- a. If the overall correction factor is below one (1.0), an immediate start **must** be made on checking all sites that have moved below the threshold level (TL).
- b. A full assessment of aggregate performance and treatments for skid resistance **must** be undertaken to ensure that appropriate aggregates and maintenance treatments are used to minimise long-term costs.

- c. Annual Maintenance programmes for all sites **must** be assessed, particularly those for sites where skid resistance is between IL and TL.

Locational accuracy

Despite the accuracy of location data and quality checks on all High Speed Data, there is still a need for commonsense cross checks at every stage.



'It's a blast'

New requirements for waterblasting/watercutting wheelpaths

From our skid resistance reviews, it has been observed that in some instances the wheelpaths have been watercut leaving lower macrotexture between and/or outside the wheelpaths, which could lead to lower skid resistance in these areas that are not being measured during the annual survey. To clarify requirements, a verbal instruction has been issued that all watercutting shall be full width unless it is clear less watercutting is adequate.

To protect against this eventuality, the following requirements are added with **immediate effect** for all treatments designed to improve macrotexture without the application of a new surfacing (eg watercutting/waterblasting and texturing).

Watercutting of Chipseals shall be undertaken over the full width of the

lane and shoulders unless the following criteria are met:

- **Either, the macrotexture of the areas not watercut is equal to or more than the areas watercut.**
- **Or, the macrotexture outside the area watercut exceeds 2.0mm MPD for grade 2 & 3 chipseals and 1.5mm for smaller chips (for two-coat chipseals etc, the chip size refers to the larger chip).**

More detailed information will shortly be available in the form of an interim 'best practice memo' and incorporated into the revision of T/10. In the meantime, any further clarification needed can be obtained from National Office by contacting:

Dave Whitehead (04 894 6282) or David Cook (04 894 6298).

AUSTROADS

Austrroads has developed and recently issued their Asset Management publication series. One document relates to road measurement, of which skid resistance measurement is one of the topics convened. This document covers the principles of measuring skid resistance on road networks and is available on their website (for free electronic access, just go to the NZTA website: www.nzta.govt.nz).

There are also a number of other Austrroads research projects being managed under the sponsorship of the Asset Management Task Force.



Economics of the State Highway Skid Resistance Policy

Is the SH Skid Resistance Policy economic?

There are large benefits but also significant costs. This note outlines the work that has been done and comments on future intentions.

First, there was the research that showed, for New Zealand SHs, an increase in the SCRIM Coefficient of 0.1 reduced crash rates by 35% for wet roads and 20% on dry roads.

To get a better idea of benefits, we then looked at crash rate trends since before the skid resistance policy was introduced (1997) and current time.

The trends for two ratios were considered:

- Wet and dry road crash rates. With the information that crash rates are higher in the wet than the dry, we would expect the crash rates to be reduced more in wet than dry conditions.
- Comparison of changes in crash rates between local authority and SH roads. Generally SHs have a better skid resistance policy than local authorities.

(Some LAs do have a very good skid resistance policy, but only on the more important sections of their network.) If the SH skid resistance policy is successful, it should show a greater reduction in crash rates than has occurred on the local authority roads.

Both ratios indicated that the SH skid resistance policy has reduced wet road crash rates by around 20%.

The benefit of the above methodology is that it eliminates changes due to engineering policing, etc.

With the information above, we set out to calculate the total benefits of the SH policy and compare them with the costs.

Costs come from:

- earlier resurfacing due to skid resistance requirements
- waterblasting/watercutting to improve macrotexture
- scabbing to improve microtexture

- consultancy services to assess surfacings
- SCRIM survey
- higher PSV aggregate is required to achieve target skid resistance.

The major cost is any reduction in the life of chipseals.

The conclusion is that the SH skid resistance policy has a probable benefit/cost ratio of between 7 and 18. Recent work on the life of chipseals indicates that the B/C should be closer to the top end.

In addition, should skid resistance standards be reduced, the increased crash rates will be more than the savings made initially, as drivers have learned to expect good standards of skid resistance.

Further work is planned to update the data used and check costs and benefits, particularly the change in the life of chipseals.

Improvements to high-speed data survey

- New and improved video resolution and angle of vision
- Improved locational accuracy to $\pm 1.0\text{m}$ (98% of highway network)
- Video linked to more accurate GPS, with frame 10m ahead of GPS coordinate
- Hardwiring of T/10 Site Categories for IL location/reference
- Exception Report for SCRIM uncorrected info will be available in RAMM
- New texture measure being investigated to better capture finished surfaces
- Profile variance data is also available for investigation

Notable skid activities

- Crash reduction and reduced risk
- Technical notes
- 3rd International Conference planned
- Innovative surfacing techniques
- Improving safety on Out of Context curves
- Technical reviews
- New specification - T/10 revision coming soon
- Skid workshops in 2010

What's ahead?

- Improved measurement texture
- STAG performance measures and accountability
- More upskilling suppliers - regional workshops
- International Skid Conference
- 2 SCRIM vehicles in New Zealand

Footnote: Thanks to retiring members David Cook and Colin Brodie for their dedication, focus and technical expertise.

T/10 revision

T/10 is being rewritten to reflect current 'best practice' from both New Zealand and overseas (see the separate article in this newsletter).

Remember, as the latest round of Exception Reports is currently being issued, now is a good time to review any actions from the above. You may be next on our list!



For more information

Visit the NZTA website at www.nzta.govt.nz or call our contact centre on 0800 699 000.