

REAAA Young Presenter Competition

RUMBLE LINES

Cold Applied Plastic

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Rumble Lines



In 2007, on the New Zealand State Highway system alone, there were 4241 reported loss of control/head on crashes, of which 62% were in adverse conditions.

It was statistics like this that prompted the NZ Government to introduce the Road Safety to 2010 campaign in 2002.

The goal for this campaign was to have no more than 300 fatalities and 4500 hospitalizations by the year 2010.

SWATT

South Waikato and Taupo Target 2010

Transit and the Land Transport New Zealand, now known as the New Zealand Transport Agency, the police, local authorities, Waikato University, TERNZ, ACC, and the Ministry of Transport are all part of the SWATT 2010 project team.

They looked at a 200km stretch of road from Karapiro to the desert road summit, on which as a consequence 114kms of rumble strips were laid.

According to the Ministry of Transport's Crash Analysis System's (CAS) data, half of all the serious crashes in NZ roads have nothing to do with Alcohol or speeding. The fact is that our roads, by international standards, are not very safe. They are lined with telegraph poles, trees, ditches, drops and walls. All this with no more than paint separating high-speed traffic from personal injury to themselves and possibly others.

Methods

- Colin Brodie (Transit/NZTA) in conjunction with Dr Sam Charlton (TERNZ) and the University of Waikato developed a set of Measures of Effectiveness; These were:
- MOE 1: Lane keeping – Goal: A decrease in wheels over the lines.
- MOE 2: Vehicle speeds – Goal: No increase in the speed of 85% of vehicles. This was to ensure that the drivers did not compensate for the improved delineation with faster speeds.
- MOE 3: Overtaking Manoeuvres – Goal: A decrease in overtaking maneuvers in undesirable locations.

Outcomes

- Improved lane keeping with reduction in vehicles travelling on extreme left or right of the lane.
- Significantly reduced the number of vehicles with wheels over the edgelines.
- Virtually eliminated centreline crossings at sites where overtaking was considered dangerous.

The SWATT Project is still ongoing so results are as yet inconclusive.

The Most Effective Solution is.....



Audio and Tactile Markings – Rumble lines.

Audio and Tactile Markings are recognized World Wide as an excellent way of minimizing these accidents.

How? It's simple: The noise and vibration wake the driver up!

Research at the time indicated

- Shoulder Rumble Strips reduced:
 - “Run off Road” injury crashes by 32%
 - “Run off Road” fatal crashes by 42%
- Centreline Rumble Strips reduced:
 - “Head-on” and “Sideswipe” crashes by 21% - 37%



Figures courtesy of Transit

Crash Evaluation Results

- 67% reduction in fatal and serious crashes
- 72% reduction in social cost

Figures courtesy of Transit

Situation at present

Profiled Edge lines

- 660 Road kms or
6% Rural SH Network

Profiled Centreline

- Approximately 100 kms or
1% SH Network

Estimated figures

Where to?

Transit have indicated the application of a further 2000Kms (18% of the Rural Network) to the existing trial sites.

Costs

- \$45 Million over the next 5 years
- \$10 Million pa Additional Maintenance

Potential Annual Savings

- 13 fatal crashes
- 150-200 injury crashes
- \$100 Million Social Cost

Wet Night Visibility

One of the benefits of using CAP Rumble and Structured lines is its excellent wet night visibility.



- The top frame is a rumble strip with a structured line beside.
- The bottom frame is a standard Alkyd paint with drop on beads.
- Both are 7 months old
- The top has a vehicle count of 6510 Lane Vehicles Per Day and the bottom 2010 LVPD.

Would you plan your drive differently if you knew-

- 10% of the drivers on our roads were on drugs.
- 30% of Truck Drivers were tired
- Many Drivers could not see well at night
- 80% of the drivers on the road were not concentrating.

Figures obtained from an AA
Member Survey 2004

The Drivers

It is recognised that whatever we do to make drivers more alert, law abiding and competent, some will still make mistakes, but they should not have to suffer the possibly harsh outcomes of a crash. We must work on designing and operating a road network that is more forgiving.

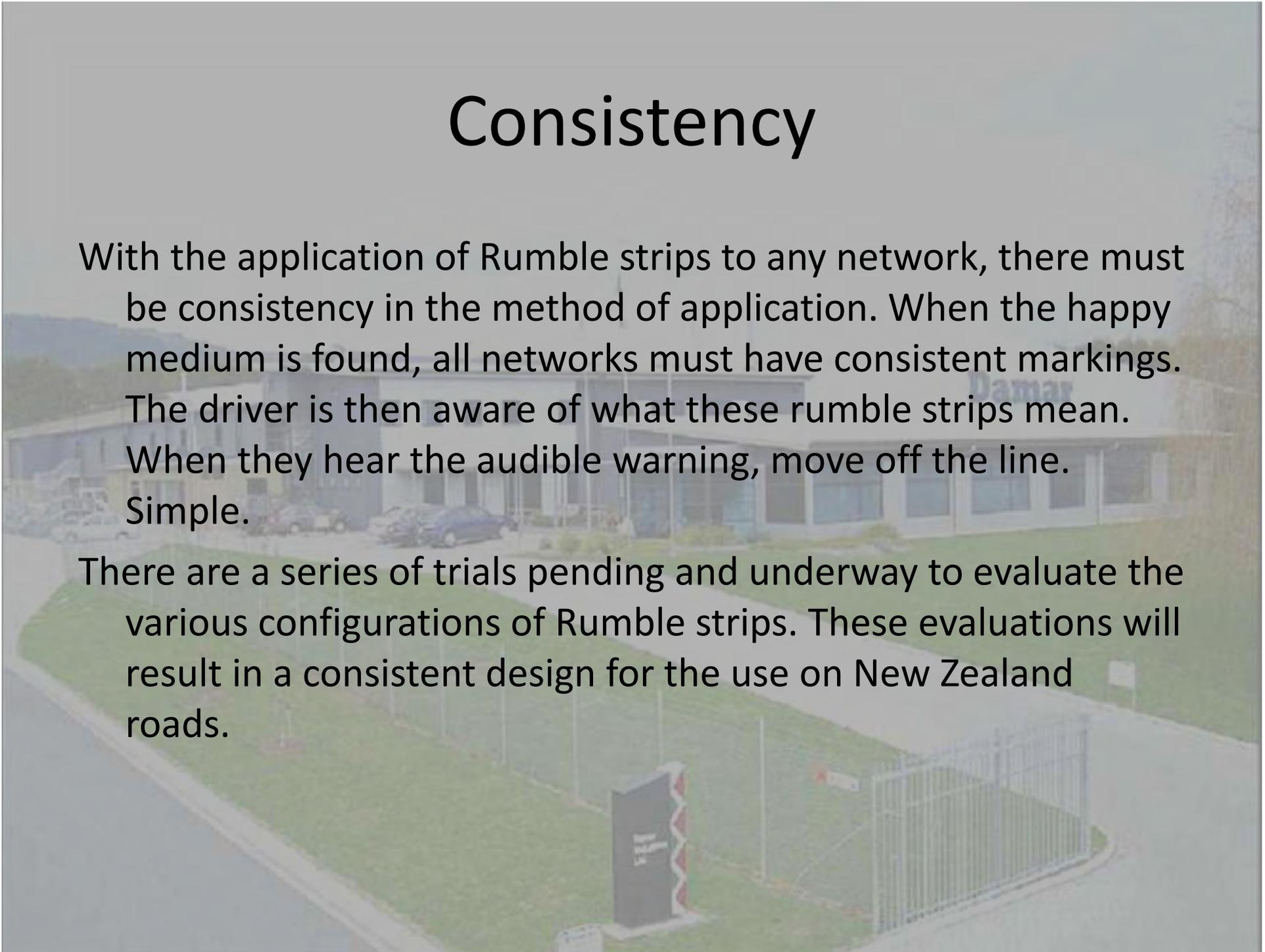
We can reduce both the number of crashes that happen and the severity of those that do occur, by re-designing roads to make them safer. However the risk cannot be eliminated through infrastructure improvements alone, there must be improvements to the drivers, the vehicles and the roads.

Engineering measures can influence the messages we receive by making a road more 'self-explanatory'. The messages we receive and the way we react can have a significant influence on reducing crash occurrences and outcomes.

Consistency

With the application of Rumble strips to any network, there must be consistency in the method of application. When the happy medium is found, all networks must have consistent markings. The driver is then aware of what these rumble strips mean. When they hear the audible warning, move off the line. Simple.

There are a series of trials pending and underway to evaluate the various configurations of Rumble strips. These evaluations will result in a consistent design for the use on New Zealand roads.



Summary

All the data that I have access to points to the fact that Rumble Strips are an effective method of changing dangerous driving behaviour.

We need a consistent set of markings throughout New Zealand to make the driving public subconsciously aware of the unwritten rules of Rumble Strips.

Thank you for your time

Questions?

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