

EXPERIENCE GAINED IN ROAD SAFELY IN IMPLEMENTING SAFER SURFACINGS

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ABSTRACT

This paper looks at the responsibility of a road network operator in terms of road safety and in particular the importance of managing intervention in respect to the skid resistance of surfacing. The need for a cultural change in thinking in respect to the responsibility of managing a road network including the importance of skid resistance of road surfaces to the motorists trust in the network is canvassed.

Intuitional changes needed to be made and decision makers convinced that investment in improving the surfacing had a major economic pay back as well as avoiding the possible embarrassment of the Police shifting their investigative attention from a crashed vehicle driver to the road network operator.

ROAD MANAGEMENT

Roads are essential services and in many ways provide the major fabric of society in terms of corridors for all types of services.

Like any infrastructure operator road network managers must ensure that their network is safe for users. Hence when evaluating the safety of a road network every aspect of the dedicated corridor needs to be assessed including any other operator utilising the corridor eg utility provider, is not compromising the safety of the network. Examples that pose a risk; power poles located in inappropriate positions, road excavations with inappropriate reinstatement.

RISK MANAGEMENT

Like any business identifying and then managing any risks is a very important part of operating a success road network. This is best achieved by identifying as many risks as possible, classifying them into high, medium and low in terms of both likely occurrence and consequences. Balancing competing demands between different risks and the desire of the users is very demanding and needs to be carried out in a formalised way.

By carrying out such an exercise and taking action within budget restraints many liabilities and legal challenges can be mitigated. Detailed documentation of the risk analysis undertaken and actions implemented serve to back up any defence.

ROAD USERS.

As determined by user interviews, road users focus on;

- road system reliability
- comfort and low stress
- safety
- efficiency
- price and level of service

To respond to these road user demands a road network operator needs to focus on;

- fitness for purpose
- no surprises to the driver
- ensuring a balance between mobility and safety
- where appropriate and economic using new technology to assist in road management

SURFACING SKID RESISTANCE

From the identification of risks inherent in operating a road network the importance of skid resistance becomes very evident in that a driver cannot determine how the vehicle that a person is driving, will react to the surfacing characteristics. It is well known that the friction between the surfacing and the tyre is influenced by many factors such as;

- vehicle speed
- surface texture
- water depth and tyre characteristics
- seasonal variations including temperature
- road geometry; and
- surface contamination.

In an attempt to protect the road network operator it is common for low speed value signs to be erected on corners and sometimes slippery road signs are displayed to warn the driver of a potential risk. However it is well known that most drivers ignore these signs.

In order to cover the worst possible scenario such as a wet polished road surface with a worn tyre running on it, the speed advisory level needs to be very low to the point where most drivers will ignore them and travel much faster. Also a combination of factors such as the first rain after a long dry spell will see the skid resistance of the sealed surface being much lower than normal especially if the aggregate polish stone value is low.

Some times specific sections of road have characteristics which are out of character with most of the road network. An excellent example of such a situation was located on State highway two near Wellington New Zealand where a tight corner passed under an over bridge. Before treatment with a surfacing of calcined bauxite there were approximately one crash each week. See figure 1

After treatment the crash rate reduced to approximately 2 per year.

NETWORK RESPONSE

I have been asked many times “ how did staff at Transit NZ the State highway network operator from 1989 to 2008, convince the governance board to assign funding to improve the skid resistance levels where they were below normally acceptable standards when funding was very tight for both maintenance and construction?”.

The process we used in New Zealand was to carry out annual skid resistance surveys of the State highway network. It is very important to ensure the reference system being used can locate accurately the sections of the road being tested as once the results are obtained you need to be able to go back to the actual location on the highway to carry out more detailed analysis on why the skid resistance is so low.

Clearly there is no absolute level of acceptable skid resistance for all situations, but by establishing investigatory levels which vary depending on the specific situation this can be accommodated. For

instance approaches to roundabouts and compulsory stops need a higher level of skid resistance than normal straight unrestricted lengths of highway.

Once the say worst 5% of the sections of highway are identified, a benefit cost analysis was carried out using accident statistics at the specific sites. What we found especially in the early days of testing , that a benefit to cost ratio of around 40 % was common. In other words the low cost of treatment brought about very high benefits.

Armed with this information a case was submitted to the board on the basis that it makes economic sense and how can a road network operator ignore this information by not taking corrective action.

The point I made to staff and board members was “ how will Transit NZ look on national television or at a coroners inquest when a crash occurs at one of the known poor skid resistance sites and no action had been taken to rectify the situation. The other important point was that an investment of just over \$5 million NZ dollars in the year 2000 was likely to have saved \$395 million over ten years.

CONCLUSIONS

All road owners /operators need to develop appropriate, realistic and achievable strategies for all aspects of the operation of the network. This is best achieved by identifying risks and then strategies to mitigate these risks . Short term measures such as signage is better than doing nothing but one always needs to find a longer term solution. Improving skid resistance is just one of the safety measures for a road network , but fortunately it is normally a low cost high benefit action that greatly assists the motorist with a “no surprises” road environment. Remember a proactive strategic approach to address specific risks is a defensible position against litigation.

Crashes SH2 - Petone underpass northbound

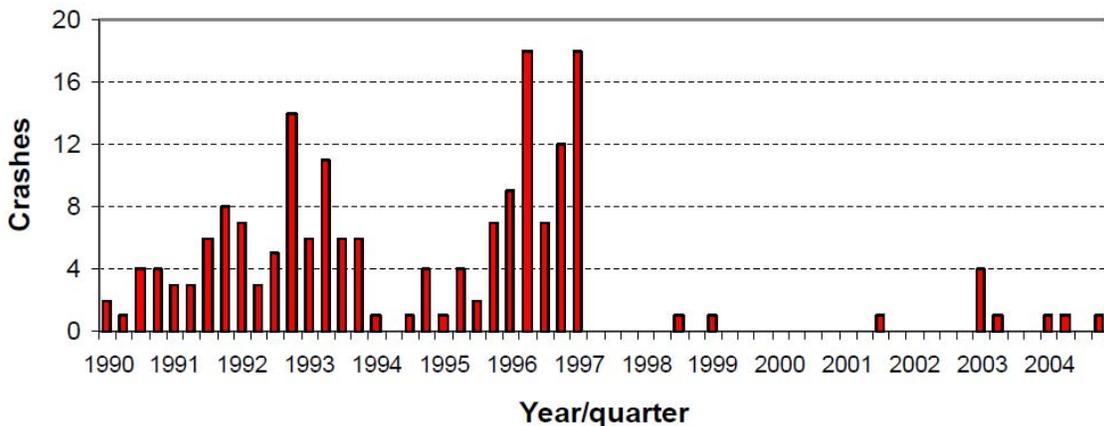


Figure 1: Crashes SH2

AUTHOR BIOGRAPHY

Past chief executive of Transit New Zealand and the New Zealand Ministry of Transport.
Past involvement with a number of overseas transport organisations including the World Bank and Austroads.

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