

## Understanding And Improving The Performance Of A Public Domain Guard Fence System

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### Abstract

For over 30 years Australian State Road Authorities have been using public domain guard fence systems as the primary roadside barrier on their networks. As crash testing standards have evolved and improved over time very little has been done to understand the performance of these systems and to look for improvements, particularly as we all have 1000s of kms already installed on our network and as better systems have been developed by industry. This abstract proposes to take those interested through the journey VicRoads has taken to understand the performance of its public domain guard fence system and look to improve it. Research Focused.

### Background

The development of Public Domain Guard Fence systems in Australia was undertaken well over 40 years ago to emulate work done in the United States. The Victorian public domain guard fence system known as "Type B", was developed through engineering analysis based on the G4 US system at the time and modified to reflect manufacturing practices here in Australia. Up until 2015 and in accordance with AS3845:1999 the system was "deemed to comply" with the American crash test standard NCHRP350 meaning it didn't need full scale crash testing to verify its performance and could rely on both engineering analysis and infield service performance. Over almost 30 years, minor changes have been made to some of the componentry to reflect practice in the US, with a major change being made 3 years ago to increase the height of the rail from 706mm to 740mm to improve its capacity for a growing vehicle fleet.

In 2015, AS3845 was revised where "deemed to comply" systems were no longer recognised and road safety barriers could be crash tested against NCHRP350 or MASH to demonstrate their fitness for purpose, with a preference towards MASH - 2016, the more recent test standard.

VicRoads in 2018 undertook both R&D and Compliance Crash testing to MASH to understand whether the system developed over 40 years ago met with current standard AS3845:2015.

The main objective of this project was to understand the performance of the Type B system given the 1000s of legacy kms of Type B guard fence on our network and to understand if any low cost retrofit improvements in both performance and resultant occupant injury could be made to the system for a future retrofit program.

A low cost retrofit solution would not only mean upgrading existing Type B was economically viable for a future retrofit program, as opposed to complete removal and replacement, but that the crash performance (Crash Reduction Factor) could be improved reducing the severity of injuries for occupants whose vehicles depart the road and impact the barrier, ie making it more forgiving

If successful this abstract is proposed to be a presentation with crash test videos shown to attendees.