

Traffic Note 20 – Revision 1

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From Safer Roads
Authorisation Peter Croft, Manager Safer Roads

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Truck crashes and advisory speeds – Information

1 Background

Land Transport New Zealand (Land Transport NZ), NZ Police and the road transport industry are concerned about significant risks of trucks towing heavy trailers rolling over on curves. This note provides information on these concerns and how speeds on curves should be managed. It reaffirms the important role road controlling authorities (RCAs) have in erecting and maintaining advisory speed signs with correct speed, size and placement.

2 Truck crashes

The Police Commercial Vehicle Investigation Unit (CVIU) attends most injury crashes involving heavy vehicles. In 2004 CVIU reported 479 heavy vehicle crashes of which 162 (34 %) involved a heavy vehicle rolling over. If buses are excluded then 37% of truck crashes involved a roll over.

The three main causes associated with CVIU reported rollover crashes in 2004 were:

- 'Excess speed for conditions' in 54% of rollover crashes
- 'Inattention' in 33%
- 'Fatigue' in 16%

The high incidence of 'excess speed for conditions' crashes should be noted.

3 Stability performance standards

The *Land Transport Rule: Vehicle Dimensions and Mass 2002* introduced a stability performance standard for the heaviest classes of trucks and trailers which must have a Static Rollover Threshold (SRT) of at least 0.35g whenever used on a road. SRT is the lateral acceleration, in units of gravity

(g), at which vehicles will roll over while negotiating a curve at steady speed. Heavy vehicle drivers are required to keep the vehicle's load within appropriate height and weight limits to maintain the minimum SRT of 0.35 g.

New Zealand research confirms an SRT of at least 0.35 g is required to negotiate curves at the posted advisory speed. Because advisory speeds are signed at 10 km/h intervals the speed on the sign should be within ± 5 km/h of the measured advisory speed. When the measured advisory speed is at the lower end of this 10 km/h interval, particularly at low advisory speed values (ie 15, 25 and 35 km/h), a large vehicle may generate a lateral acceleration higher than the minimum SRT requirement and become unstable at or near the posted speed value.

Drivers of heavy vehicles, particularly when towing heavy trailers, therefore need to reduce their speed on curves below the value posted on an advisory speed sign. The vehicle could have a high propensity to roll over with any error of judgement on the part of the driver.

4 Road controlling authority responsibility

The provision of accurate advisory speed signs is necessary for the safe operation of all vehicles but truck/trailer safety is highly sensitive to appropriate curve speeds.

In 1997 Land Transport Safety Authority (LTSA) (now Land Transport NZ) conducted surveys of advisory speed signs erected in a sample of RCAs. The results, reported in *Road Safety Survey 5: Advisory Speed Signs* (LTSA February 1998), included:

- The consistency of the speed values on advisory speed signs were not satisfactory - only 53% were 'correct' (within 5 km/h of the measured speed);
- Most critical, particularly for truck/trailers, over 17% of the speed values on the signs were higher than they should have been as measured by the survey equipment;
- Over 50% of advisory speed signs were a smaller size than recommended in the *Manual of Traffic Signs and Markings* (MOTSAM); and
- Over 80% of signs were closer to the curve than recommended in MOTSAM.

RCAs are strongly advised to ensure all advisory speed signs are in compliance with MOTSAM.

A brochure "*Could you roll over today?*" prepared and distributed by Land Transport NZ, the Road Transport Forum and CVIU advises operators and drivers of truck/trailers to, among other things:

- reduce speed especially on curves;
- go at least 10 km/h below any advisory speed sign posting on curves.

The concerns about truck/trailer stability and advice to heavy vehicle drivers to travel at least 10km/h below advisory speeds reinforces the need for accurate advisory speed sign speed values.

Land Transport NZ draws attention of RCAs to the recommendations in *Road Safety Survey 5: Advisory Speed Signs*, namely:

- regular audits of sign consistency should be carried out by RCAs; and
- any advisory speed not measured since 1992 should be resurveyed.