



Curve advisory speed assessment practice in NSW

Fact sheet

Purpose

This factsheet provides road safety practitioners with the rationale for the use of electronic accelerometer devices when determining curve advisory speeds on Transport for NSW (Transport) managed roads. Additionally, the factsheet provides a series of recommendations on the process for conducting network level curve audit surveys using such devices.

The relevant Australian Standard permits suitable devices other than the historically popular ball bank indicator to measure centripetal force for the purpose of determining curve advisory speeds. A ball bank indicator is a simple device that is fitted to the dashboard of a car and is able to measure centripetal force as the vehicle negotiates curves at speed.

Electronic accelerometer devices

In recent years, electronic accelerometer devices¹ have been developed to measure centripetal forces and automatically correlate this data with GPS location, speed and distance data.

Using an accelerometer requires no user interaction after the automated levelling process is completed and the instrument activated. The user is then free to concentrate on driving activities, while the device receives and analyses curve data over sections of road. As an output, the device produces files which may then be analysed by different software for either manual, single curve analysis or mass interrogation.

Simultaneously, compatible software packages² are then able to continually analyse curve data based on programmed time and lateral acceleration thresholds, enabling the identification and analysis of long compound curves, reverse curves, and other complex curve characteristics.

The use of electronic accelerometer devices increases the accuracy, reliability and capacity of Transport to assess curve advisory speeds across the road network.

Level curve audit survey

The following general guidance is provided on the use of accelerometer devices when conducting network level curve audit surveys to determine advisory speeds on curves.

- Network level curve audit surveys should only be conducted by practitioners with appropriate training in setting up the test vehicle, and use of the accelerometer and data analysis software.

¹ An example of a digital accelerometer device is a Vericom VC4000DAQ, although there are others on the market which may be suitable.

² An example software package is the Curve Advisory Speed Tool (CAST) MS Access data base, although there are others on the market which may be suitable.

- To receive a representative survey of a road section, the survey should be undertaken at least once in both directions along the given section of road. The lowest advisory speed should be selected when any variance is observed between passes. Additional passes may be required depending on the policy of the regional division and experience of the practitioner.
- During data collection, the speed at which the test vehicle negotiates a curve should be between the nominal advisory curve speed up to but no more than 10% of the nominal advisory curve speed. This ensures that a sufficient accelerometer reporting response is generated.
- Potholes or other minor obstructions should be traversed by the test vehicle rather than avoided, as such manoeuvres can skew results.
- Surveys should be repeated on curves or sections of road where obstructions, such as slow moving vehicles or other road hazards have impacted achieving a steady speed and/or curve path. However low-speed and stopping manoeuvre anomalies will not impact results.
- Analysis using accelerometer devices and associated software will yield advisory speeds to the nearest 1 km/h, and as such engineering judgement should be used to discern and select the most appropriate advisory speed for a given curve.
- A manual record of road curve sign inventory may be used with digital event markers to reconcile survey results with existing signage.

A more detailed step by step process for determining curve advisory speeds, is provided in Appendix A.

Need more information?

Further information on Transport practice for curve advisory speeds is provided in:

- AS 1742.2, *Manual of uniform traffic control devices Part 2: Traffic control devices for general use*, and the associated Transport supplement;
- Transport Delineation Guide;
- Transport Speed Zoning Guidelines; and
- Other relevant Austroads Guides.

Additionally, practitioners may submit enquiries to srp.support@transport.nsw.gov.au.

Appendix A – Field survey process

The following flow chart provides process by which a field survey should be undertaken.

