



Vehicle Activated Signs



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INTRODUCTION

Vehicle activated signs (VAS) have been developed to address the problem of inappropriate speed where conventional signing has not been effective. This leaflet describes the range of Vehicle Activated Signs and the conditions under which they should be used.

The purpose of this TA leaflet is to describe the use of measures involving a range of Fibre Optic or LED Vehicle Activated Signs. VAS are one of a range of measures capable of affecting drivers speed choice over a range of circumstances. They are however an adjunct and are not an alternative to fixed signs.

BACKGROUND

There is an established relationship between vehicle speeds and road accidents. On rural roads, driving too fast for the conditions is more likely to be a factor in accidents than exceeding the speed limit. Encouraging drivers to adjust their speed to suit the conditions is particularly important, since driver error is the major contributory factor in 95 per cent of accidents.

A range of rural road safety engineering measures, including vehicle activated signing, has been developed to encourage drivers to approach hazards such as bends and junctions at a safe speed, and to encourage them to comply with the speed limit, e.g. through villages. Drivers exceeding a set threshold speed trigger a sign indicating the specific hazard or the speed limit. This may be accompanied by the message "SLOW DOWN".

The latest generation of vehicle activated signs display a message (symbols and words) delineated by either fibre-optic cables or light emitting diodes (LEDs) mounted on the front panel of the sign. Different parts of the message or symbols can be shown in different colours. The sign face is provided with an automatic dimmer to reduce the intensity during night-time operation. When not activated by a vehicle, the sign remains blank (i.e. blacked out).

The signs used recently have been of two types:

- Speed enforcing;
- Warning of a hazard



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A study of the effectiveness of over 60 installations on rural roads in Norfolk, Kent, West Sussex and Wiltshire has been conducted by TRL for the Department. The trial assessed the effect of the signs on speed and on injury accidents, and drivers' understanding of the signs (TRL Report 548 Vehicle activated signs – a large scale evaluation).

The signs appear to be very effective in reducing speeds, particularly those of the faster drivers who contribute disproportionately to the accident risk, without the need for enforcement such as safety cameras. In this study, a substantial accident reduction has been demonstrated.

APPLICATION GUIDELINES

Vehicle activated signs are not a substitute for standard plate signing nor are they to be used as speed limit repeater signs. Vehicle activated signs will not normally target all drivers but rather that population exceeding the posted speed limit or a safe speed for the particular hazard. If used correctly they will be illuminated for only a proportion of drivers and are therefore not repeater signs.

Vehicle activated signs should be considered only when there is an accident problem associated with inappropriate speed that has not been satisfactorily remedied by standard signing and where safety cameras and related signs are not a cost effective or otherwise appropriate solution.

Inappropriate speeds might include vehicle speeds on the approach to a hazard, such as a bend or junction, that are below the posted speed limit and consequently below the police enforcement thresholds.

INSTALLATION GUIDELINES

Before the decision to install vehicle activated signs is made, it is important to undertake an audit of existing furniture, fixed signs, road condition and road markings to assess their standard and condition.

It is not recommended that vehicle activated signs are deployed unless it is clear that the problem cannot be remedied by improving the fixed signing. It should also be noted that vehicle activated signs are not a substitute for conventional signs and they should therefore only be used sparingly.

Detailed accident investigation should also be undertaken to identify the dominant accident patterns and confirm that vehicle activated signs are an appropriate remedial measure.

Site selection should also take into consideration the number of speed-related accidents and particularly inappropriate speed for the conditions, for example, on the approaches to bends and junctions. Monitoring of traffic speeds should be undertaken to establish that a problem with inappropriate speed exists.



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The collection of speed data prior to the installation of the vehicle activated sign should enable the estimation of a suitable threshold speed for the sign to display the message. Speed thresholds for warning signs should be set at the 50th percentile speed measured before installation. For speed limit signs the threshold should be set depending on road conditions. (A reasonable benchmark would be the ACPO guidelines on enforcement of 10% + 2mph; ie in a 30mph speed limit the threshold would be set at 35mph).

It is crucial that the speed monitoring detectors are installed as accurately as possible to minimise errors in speed measurement.

The cost of running mains power to the installation should be investigated at an early stage of planning in order to make contingencies for an alternative power source (solar panels/wind powered generators) if the costs are too high. However, it is important that alternative energy sources are assessed for their impact on the visual environment and increased susceptibility to vandalism and theft.



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SIGNS PRESCRIBED IN TRAFFIC SIGNS REGULATIONS & GENERAL DIRECTIONS 2002

Regulation 58 Traffic Signs Regulations & General Directions 2002 permits any prescribed sign in Schedules 1-5, 7, 11 or 12 to be used as a VAS.

A limited range of warning signs are allowed in combination with a "SLOW DOWN" plate and will not require special authorisation. These are:



504.1 (Crossroads ahead)



505.1 (T-Junction ahead)



506.1 (Side road ahead)



507.1 (Staggered junction ahead)



510 (Roundabout ahead)



512 (Bend ahead)



512.1 (Junction on bend ahead)



512.1 (Junction on bend ahead)



513 (Double bend ahead)

Before installing a vehicle activated warning sign, local authorities should ensure that the permanent fixed warning sign, sited in advance of the VAS, is correctly and appropriately placed. The siting distance should be in accordance with Chapter 4 of the Traffic Signs Manual and will depend upon the 85th percentile approach speed. For example, if the 85th percentile speed is 60mph, the sign will be approximately 245 metres from the hazard. If the 85th percentile speed is 40mph, the sign will be approximately 100 metres from the hazard.

Traffic engineers should note that placing hazard warning signs too close to the hazard could render them ineffective. The use of rectangular yellow backing boards can help to make signs more conspicuous (see chapter 7 of Traffic Signs Manual paras 14.22 - 14.26).

Once the permanent signs have been correctly installed and if the problem with the associated hazard persists, a VAS can then be considered. It is important that the VAS is also correctly sited. If it is too far from the hazard, it is possible that the association between the sign and the hazard will not be made. If it is too close, it leaves a very short response time. Where signs are designed to draw attention to a hazard, they should be installed 50-100 metres in advance of that hazard, to give the driver time to respond.

Signs must not contain non-standard pictograms or messages (i.e. those not prescribed in the Traffic Signs Regulations), to avoid causing ambiguity and confusion to drivers.

Diagram 670 when displaying 20, 30, 40 or 50 may also be used with a "SLOW DOWN" plate. The purpose in this case is to remind the driver of the speed limit in force and the VAS should therefore be set to activate as close as possible to the speed limit. Because the sign will only be activated when the limit for the road is exceeded, it does not constitute as a repeater.

The camera symbol, Diagram 879 (TSRGD 2002) can also be used in light emitting colour inverted format without special authorisation. It cannot however be used with a "SLOW DOWN" plate

Signs other than the above may not be used without special authorisation from the Department for Transport or equivalent devolved administration. When considering installing VAS, local authorities and sign manufacturers must ensure that the signs and equipment are compliant with the relevant regulations:

- Regulation 58 of the Traffic Signs Regulations 2002.
- Direction 56 (type approval) of the Traffic Signs General Directions 2002.
- Functional specification for the optical performance of discontinuous variable message signs – TR 2136 Issue C, March 2002, Highways Agency.

VARIABLE MESSAGE SIGNS (VMS)

The TRL on behalf of the Department carried out some work on the issue of VMS outside schools. Several sites were selected and monitored using various types of roads with differing speed limits. Typically, the speed limit was lowered to 20mph one hour each side of school start and finish times. The results found that this measure as a speed reducing feature had little effect upon vehicle speeds. Added to this, the cost of installation (a VMS would be required on all approach roads as well as the road on which the school is situated) led to the conclusion that they offered poor value for money. Any request for authorisation is therefore unlikely to receive approval.

MAINTENANCE

The operational efficiency of VAS requires that regular maintenance is carried out. This involves cleaning the sign face, removing any obstructing foliage and in particular ensuring that the vehicle detection system is functioning correctly. It is suggested that a six monthly inspection is carried out at all VAS locations.



AUTHORISATION PROCESS

As indicated earlier, if a scheme complies with the requirements and regulations already detailed in this TAL, there is no need for special authorisation.

TECHNICAL ENQUIRIES

Road Safety Division 2
Department for Transport
Zone 2/13
Great Minster House
76 Marsham Street
London
SW1P 4DR

REFERENCES AND ADDITIONAL READING:

TA Leaflet 1/95 Speed Limit Signs – A Guide to Good Practice
TA Leaflet 1/00 Traffic Calming in Villages on Major Roads
TA Leaflet 11/00 Village Traffic Calming – Reducing Accidents

TRL Report 385 Traffic Calming in Villages on Major Roads: Final Report
TRL Report 548 Vehicle Activated Signs – a large scale evaluation
Traffic Signs Regulations and General Directions 2002
(50 ISBN 0-11-042942-9) £40

DfT Circular 02/2003 The Traffic Signs Regulations and General Directions 2002 (50 ISBN 011753647-4) £6

Functional specification for the optical performance of discontinuous variable message signs – TR 2136 Issue C, March 2002, Highways Agency

DfT WEBSITE www.dft.gov.uk

Details of Traffic Advisory Leaflets available on the DfT website can be accessed as follows:

From the DfT homepage, click on the Local Transport icon and then on Traffic Advisory Leaflets. Lastly, click on one of the themes to view material.

The Department for Transport sponsors a wide range of research into traffic management issues. The results published in Traffic Advisory Leaflets are applicable to England, Wales and Scotland. Attention is drawn to variations in statutory provisions or administrative practices between the countries. The Traffic Advisory Unit (TAU) is a multi-disciplinary group working within the Department for Transport. The TAU seeks to promote the most effective traffic management and parking techniques for the benefit, safety and convenience of all road users.

Department for Transport

Requests for unpriced TAU publications to:
Charging and Local Transport Division,
Zone 3/23, Great Minster House
76 Marsham Street, London, SW1P 4DR.
Telephone 020 7944 2478
e-mail: tal@dft.gsi.gov.uk

Scottish Executive

Within Scotland enquiries should be made to:
Scottish Executive, Development
Department, Transport Division 3, Zone 2-E,
Victoria Quay, Edinburgh, EH6 6QQ,
Telephone 0131 244 0847
e-mail: roadsafety2@scotland.gsi.gov.uk

Llywodreth Cynulliad Cymru Welsh Assembly Government

Within Wales, enquiries should be made to:
Welsh Assembly Government,
Transport Directorate, 2nd Floor, Cathays Park,
Cardiff, CF10 3NQ
Telephone 02920 826947
e-mail: andrew.hemmings@wales.gsi.gov.uk



Cycling



Traffic Management



Walking



Bus Priority Systems



Parking



Signs and Signals