



**Safe Temporary Traffic Management Operations
Initiative**

**Trial Report:
Sequential Flashing Cone Lamps**

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1 INTRODUCTION

The Highways Agency's aim is "*Safe Roads, Reliable Journeys and Informed Travellers*". Maintaining high quality roads and ensuring the safety of those on the motorway and trunk road network is paramount to the Agency as reflected in the Prime Objective – "*To deliver a high quality service to our customers by: - reducing congestion and improving reliability through a programme of improvements to the strategic road network, Improved management of incidents and roadworks [and] improving road safety*".

Road maintenance and improvement schemes are an essential part of delivering a high quality road network, but the work required often requires lane closures. The cones at the beginning at a lane closure (referred to as the 'cone taper') are frequently struck by vehicles that have failed to see them or exit the closed lane in sufficient time. Near miss data collected by Carillion in Area 4 showed that cone taper strikes accounted for around 50% of "near miss" incidents recorded in 2001 and 2002 (Trials Team Annual Report 2002). Cone taper strikes can lead to accidents which not only affect the operatives working within the confines of the TTM scheme, but can injure members of the public and cause road congestion and secondary incidents.

In 2002 the Trials Team began evaluating the use of sequential flashing cone lamps to enhance the visibility of cone tapers and so reduce the frequency of cone taper strikes in temporary traffic management schemes. Following a number of off-road evaluations of sequential flashing cone lamps, the Trials Team developed a generic specification for the type of sequential lamp system that would prove simple to deploy and provide the level of enhanced visibility required. A copy of this generic specification is contained in Appendix A of this report.

The generic specification was sent to all UK lamp manufacturers and interested parties, and one manufacturer (Dorman Traffic Products Limited) indicated that an existing product in their range could be developed to meet

the requirement of the specification. With assistance from the Trials Team, the product was developed and tested. Following an off-road demonstration of the system to representatives from the Department for Transport, trial approval was granted for a live trial of the lamps on the road network.

This report provides an overview of the live trial and presents the results from the analysis of the trial data.

2 TRIAL DESCRIPTION AND METHOD

The trial was conducted over a two-week period in April 2005. This section details the equipment, trial location and data collection methodology used.

2.1 Site Location

The site location for the trial had to meet the following requirements:

- An existing programme of temporary traffic management should be in place
- Identical temporary closures should be required at the same location for the same period over a period of two weeks
- No additional signing (e.g. gantries) to be active other than the 'standard' Chapter 8 signing
- Inductive loop pairs should be installed every 100m in the carriageway surface to sense vehicles approaching the trial site

Identifying a site location capable of meeting all four requirements was extremely difficult. A large number of locations were identified which met the first three requirements and the installation of inductive loops at one of these sites was investigated but found to be prohibitively expensive.

A trial site was finally identified that met all the site criteria. This was on the M42 northbound carriageway between Junction 5 (Solihull) and Junction 6 (Bickenhill). This was within M42 Active Traffic Management (ATM) pilot area, and hence was equipped with vehicle sensing loops every 100m.

The trial was conducted before Phase 2 of the ATM works was commenced and thus there was no additional gantry signing displayed during the trial. High-intensity lighting was present on this section of the motorway to support the use of CCTV for the ATM pilot. The closure commenced at marker post 29/5 (location arrowed in Figure 1 below):

Figure 1: Location of Trial Site



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2.2 Traffic Management

The M42 Active Traffic Management pilot scheme works were managed on behalf of the Highways Agency by MouchelParkman Services Limited. Traffic management was contracted to Highway Traffic Management Limited (HTM) under standing arrangement with MouchelParkman in relation to existing works on the M42 and this was used for the purposes of the trial. The method statement relating to the use of the lamps for trial is contained in Appendix B.

All closures carried out took place in Lane 1 of the three lane northbound carriageway. The first cone of the cone taper for the trial was placed at marker

post 29/5. Closures were carried out overnight, starting on the evening of the day indicated and typically being removed by 03:00 on the following day. Closures were not scheduled for Friday nights due to the higher traffic flows present on the motorway at these times. The closures used for the trial were carried out as shown in Table 1:

Table 1: Closures used to trial sequential flashing cone lamps

Day of week	Week 1		Week 2	
	Date	Lamp Type	Date	Lamp Type
Monday	18 th	Static lamps	25 th	-
Tuesday	19 th	Sequential lamps	26 th	-
Wednesday	20 th	Static lamps	27 th	Sequential lamps
Thursday	21 st	Sequential lamps	28 th	Static lamps

Closures were not installed on the 25th and 26th due to other roadspace bookings on these evenings.

2.3 Equipment

Previous trials of sequential flashing cone lamps identified that the optimum technology for enhancing the visibility of the cone taper was the use of LED cone lamps with integral backlight. The Sequential Flashing Cone Lamps were also intended to replace standard road danger lamps (as defined in Regulation 55 of the Traffic Signs Regulations and General Directions 2002) and therefore would be expected to be set at a maximum of nine metre centres. These requirements were both reflected in the specifications for lamps for trial.

