Reducing risk in temporary traffic management operations

HSE information sheet

Construction Information Sheet No 53

Introduction

Carriageways can be dangerous places in which to work and usually require some form of temporary traffic management to control and divert traffic around a work area. Those involved in setting out, maintaining and removing traffic management schemes are particularly at risk as they work in a live traffic environment.

This information sheet outlines the key factors to address when planning, managing and carrying out temporary traffic management operations.

The guidance is for clients, designers, contractors and workers involved in establishing, maintaining and removing static temporary traffic management arrangements at road and street works.

This information sheet is not prescriptive, nor is it a technical standard. It is not a comprehensive list of the health and safety issues that may be encountered.

What the law requires

All work associated with establishing, altering, maintaining and removing static traffic management systems needs to be undertaken in ways that ensure the health and safety of both workers and road users.

In addition to highway legislation[1] such as the New Roads and Street Works Act 1991 and The Traffic Signs Regulations and General Directions 2002 (TSRGD), clients and their agents, designers, contractors and workers need to ensure that they comply with their duties under health and safety law. This requires that duty holders assess work-related risks and eliminate, reduce and control significant risks, so far as is reasonably practicable.

Clients should appoint designers and contractors with the necessary experience, skills and knowledge to plan and complete the work safely, and provide sufficient information, time and resources to do so.

Designers and contractors should assess the risks involved in projects to develop systems of work that present the lowest risks to workers and road users, for each activity, in each specific road environment.

Those doing the work must receive relevant information, instruction and training to ensure they are able to perform their assigned tasks and be provided with appropriate equipment. They should follow safe systems of work.

Design and planning

Those planning road and street works should assess the risks associated with the installation, management, alteration and removal of the temporary traffic management and, where reasonably practicable, eliminate or reduce them. Any remaining significant risks must be controlled, through careful planning and management of the works.

Those designing and planning road works and traffic management layouts should:

- Consider: road layout, location of junctions and pedestrian crossings etc, whether permanent markings and signs will need to be altered or removed, traffic flows, local attractions or events that may affect the work.
- Liaise with the traffic management contractor, main contractor, highway authority and police, to indentify appropriate traffic management systems for projects (eg the use of variable message signs (VMS), speed cameras, emergency procedures, diversion routes etc).
- Eliminate the need, where reasonably practicable, for operatives to cross high speed carriageway roads on foot to set out and remove traffic management layouts and equipment and consider:
  - specifying the use of remotely-operated roadwork signs;
  - the delivery of traffic management equipment so as to reduce the need to carry it across the carriageway, eg laying it down in the central

reserve of dual carriageways at off-peak times before the traffic management layout is to be established.

- Ensure that temporary traffic management layouts start in safe locations by avoiding hazardous positions, eg close to a bend, slip road, junction or the brow of a hill.

- Assess traffic flows along the stretch of road where work is proposed; it is important to have current, up to date information on the flow of traffic.

- Ensure that there is a minimum lateral clearance between the live lane and work area once the traffic management layout is in place, for high-speed roads it is 1.2 m, for other roads, it is 0.5 m.

The traffic management layout will depend on the speed limit and characteristics of the road such as the number of lanes, position of junctions etc. The design should clearly identify a safe location for the layout to start based on local road knowledge, traffic counts, crossing points and the practicalities of parking works vehicles without causing obstructions.

Chapter 8 of the *Traffic signs manual Part 1: Design*[2] provides information on the design standards for temporary traffic management arrangements.

Find further guidance in *Safety at Street Works and Road Works* a code of practice for the New Roads and Street Works Act 1991, known as the red book.[3]

Higher standards than those set out in the guidance may be required to reduce risks to workers and road users.

General principles

Systems of work should not involve workers crossing the carriageway unless there are:

- adequate sight lines;

- traffic flows that generate suitable gaps;

- no more than four continuous lanes to cross (including slip roads);

- safe points to start and finish crossing.

If these criteria cannot be met, other methods of work need to be considered.

Assess traffic flows at the design and planning stage, and before beginning temporary traffic management works, to ensure flows are appropriate for the proposed system of work. Consider local conditions if they affect the generation of safe gaps in the traffic, eg significant gradients.

Highways authorities, their designers and managing agents should consider the installation of permanent sign support brackets or remotely-operated signs and fixed traffic management starting points in locations where there are frequent works.

When crossing the carriageway on foot, operatives must be able to estimate the distance of approaching vehicles. Distances can be estimated by counting marker posts, lamp posts, or by other effective means.

Allow more time to cross in poor weather and when carrying loads. Allow greater distances when judging safe gaps at night, and where traffic speeds and/or crossing times are high.

When crossing the live carriageway, ensure that operatives:

- are wearing appropriate personal protective equipment (PPE);

- can see and be seen by the oncoming traffic;

- can estimate appropriate safe gaps in the traffic;

- stand back from the edge of the live carriageway before setting off;

- set off only when a safe gap is present in the traffic;

- walk straight across the carriageway;

- carry equipment in a way that does not obstruct their view of oncoming traffic;

- avoid running or zig zagging between lanes;

- avoid cats eyes and other tripping hazards;

- carry signs and equipment in a way which minimises the risk of dropping them, including reducing their resistance to the wind;

- avoid displaying the front of signs to oncoming traffic;

- do not obscure their high-visibility clothing;

- move to a position of safety after crossing, at least 1.2 m from the live carriageway on high speed roads and 0.5 m on all other roads and are, when possible, protected by safety fences or cones;

- take care when moving equipment so as not to endanger themselves or road users.

Items of equipment carried to the central reserve should be small and light enough to enable one person to move them. Avoid tandem lifting as far as is reasonably practicable. Secure light items to resist the wind.

Managers and supervisors should judge whether to start work when poor weather conditions are forecast. If weather conditions deteriorate while work is in progress, the supervisor on site should decide on whether or not to stop working.

Safe crossing of high-speed dual carriageways (speed limit greater than 50 mph)

Crossing the carriageway on foot should only be undertaken at times when traffic flows are low enough to regularly produce sufficient gaps between vehicles to allow time for workers to cross safely. Do not expect workers to have to wait for longer than 5 minutes before a safe gap occurs in the traffic.

- At less than 20 vehicles per minute across all lanes, it is likely that sufficient safe gaps occur so that workers would not have to wait more than 5 minutes to cross.

- Between 20 and 40 vehicles per minute, a site specific assessment is required to identify if sufficient safe gaps exist.

- At greater than 40 vehicles per minute it is very unlikely that the carriageway can be crossed safely on foot.

When estimating how long it will take to cross, and judging what a safe gap in the traffic is, use the following two rules:

- Allow at least 3 seconds per lane when estimating crossing times, eg at least 9 seconds for crossing three lanes.

- To estimate the length of a safe gap in metres, multiply the number of lanes to be crossed by 150.

Setting out static traffic management layouts

Advance signing

Advance signing is important in alerting drivers to the presence of workers in the carriageway on foot. Place signs so that road users can see them clearly.

Variable message signs (VMS) can be used to inform drivers of the works and any lane closures. They can be used in addition to lane closure signs. Mobile or fixed VMS systems can be used as appropriate.

Dual carriageway roads

Taper position

On certain carriageways, it may be useful to establish fixed taper positions from where all temporary traffic management layouts should start. The use of permanent, remotely-operated signs may be appropriate in these locations.

Offside lane closures on dual carriageway roads

One of the principal reasons for operatives crossing the carriageway is to set out and remove traffic management equipment for offside lane closures. Systems of work should consider:

- Can the amount of equipment be safely reduced, thereby reducing the number of crossings?

- Can the equipment be delivered to the road side in advance of being put out so that it does not have to be carried across the carriageway?

- If it is not practicable to deliver the equipment in advance, can it be placed directly from works vehicles?

Use of impact protection vehicles

Where works vehicles are used in a live lane on dual carriageway roads, it is essential that they have impact protection from a crash cushion fitted to the vehicle or by a separate impact protection vehicle (IPV) with a lorry-mounted crash cushion fitted with a light arrow, as specified in Chapter 8 of the *Traffic signs manual*.

If operatives are working in an unsecured position on a vehicle in a live lane, a separate IPV should protect it. Unsecured position means not restrained in a seat by a multipoint harness or seat belt, this would include cone wells and the back of the vehicle. Once a lane is no longer live, the separate IPV may no longer be required.

Working on foot

Operatives should only work in live lane(s) once advance signs are in place to warn road users of their presence. Where possible, operatives should face the oncoming traffic, or work with a lookout.

When working in a live lane on high-speed dual carriageways, with no safe escape refuge, eg hard

shoulder or existing closed lane, it is recommended that operatives be supported by an IPV. This should be in the same lane, displaying clearly visible direction arrows to warn road users of their location. Once the lane is no longer live, the IPV would not normally be required.

Positioning of works vehicles

Works vehicles should support operatives and minimise the need to cross the carriageway. They should be positioned to prevent funnelling of drivers toward the work area or into the path of oncoming traffic.

Maintaining traffic management layouts

Maintaining layout

Maintain the traffic management layout in order to ensure it remains in place as intended and affords the maximum protection to drivers and road workers alike.

Incidents where vehicles have struck or displaced traffic management equipment or entered the works area should be recorded. This will allow the traffic management design to be reviewed and altered, if appropriate, to maintain the safety of drivers and workers.

Cleaning equipment

Reflective signs and equipment need to be kept clean to maintain clear visibility. Replacing dirty or damaged equipment rather than cleaning or repairing it in situ will reduce time at the roadside.

Removing temporary traffic management layouts

The sequence of work for removing the equipment needs to be clear and detailed. Operatives need to have maximum protection and drivers given sufficient warning of the presence of workers in the road at all times until the equipment is removed.

Before removing the traffic management layout, check the area is clear of workers, vehicles, equipment or debris, and that any excavations are filled or covered.

Health assessments

Traffic management workers require good standards of physical fitness, eyesight and hearing. Their health should be assessed before they are assigned to traffic management activities.

Health assessments should ensure that workers:

- have full, unrestricted, use of neck, trunk and legs;
- have at least 6/12 distance vision when wearing glasses or contact lenses;
- have good hearing;
- are suitable for this work if they suffer from specific conditions, eg vertigo and balance disorders, psychotic illnesses, diabetes, cardiovascular and gastrointestinal conditions, and sleeping disorders;
- are not taking inappropriate medication, illegal drugs, or drinking excessive amounts of alcohol.

More information on health assessment and fitness to work can be found on the HSE website. See Further reading.

Personal protective equipment (PPE)

When working on, and alongside, live carriageways it is important that operatives are as conspicuous as possible. Further information on appropriate PPE can be found in, Chapter 8 of the *Traffic signs manual Part 2: Operations*, section 6.32 and *Safety at Street Works and Road Works,* Part 3.

High-visibility garments and non-slip soled footwear with toe-caps should be worn when working on or near live roads. High-visibility garments should be clean and should not be covered or obscured during work.

Additional PPE should be provided and used, as required.

Works vehicles

All works vehicles should be in good condition, driven by qualified drivers and comply with the requirements of Chapter 8 of the *Traffic signs manual Part 2: Operations*, section 5 and *Safety at Street Works and Road Works,* Part 3.

Reflective signs and panels should be clean and all lights and beacons should be clean and in working order.

Night work

Night workers (ie those regularly working between 11 pm and 6 am unless specified elsewhere in a written agreement) who are involved in hazardous,

heavy or stressful work should not work more than 8 hours in any 24-hour period, averaged over 17 weeks.

Lone working

Lone working should be assessed to determine if one person can do the tasks safely and if particular precautions are needed. Particular attention should be given to:

- The work area – how is it accessed, where will vehicles be parked?
- Manual handling – can the equipment be moved by one person?
- Traffic conditions – traffic flow and speed may mean an additional person is needed to act as a 'spotter'.
- Weather conditions – bad weather and poor visibility may make the task unsuitable for one person to do alone.
- Raising the alarm – what happens if the lone worker gets in to difficulty?

If the assessment indicates that a lone worker cannot do work safely then alternative arrangements will need to be made.

References and legislation

1 Legislation

Health and safety legislation

- Health and Safety at Work etc. Act 1974
- The Construction (Design and Management) Regulations 2015
- The Management of Health and Safety at Work Regulations 1999 (as amended)
- Personal Protective Equipment at Work Regulations 1992 (as amended).
- Provision and Use of Work Equipment Regulations 1998

Other legislation

- The Working Time Regulations 1998 (as amended)
- New Roads and Street Works Act 1991
- The Traffic Signs Regulations and General Directions 2002

2 *Traffic signs manual, Chapter 8 Traffic Safety Measures and Signs for Road Works and Temporary Situations Part 1: Design* and *Part 2: Operations* The Stationery Office 2009

3 *Safety at street works and road works: a code of practice 2013 (2nd impression June 2014)* The Stationery Office 2014 (The Red Book)

Further reading

Working time
www.gov.uk/browse/employing-people/contracts

Working alone. Health and safety guidance on the risks of lone working. Leaflet INDG73 HSE 2013
www.hse.gov.uk/pubns/indg73.htm

Guidance on managing occupational health risks in construction

Interim advice note IAN 150/15 *Guidance on Alternative Temporary Traffic Management Techniques for Relaxation Works on Dual Carriageways Highways Agency 2015* Highways Agency 2012
www.standardsforhighways.co.uk/ha/standards/ians/index.htm

Interim advice note IAN 163/12 *Alternative Entry Taper at relaxation scheme temporary traffic manage-ment on high speed roads* Highways Agency 2012
www.standardsforhighways.co.uk/ha/standards/ians/index.htm

Interim advice note IAN 181/14 *Guidance on the use of impact protection vehicles for temporary traffic management.* Highways Agency 2014
www.standardsforhighways.co.uk/ha/standards/ians/index.htm

Temporary Traffic Management Vehicle Selection on High Speed Dual Carriageways including Motorways (rev007) Highways Term Maintenance Association 2014 www.htma.info/how-we-work/health-safety--welfare/

BS EN ISO 20471 *High visibility clothing. Test methods and requirements* British Standards Institution

HSE's health surveillance web page:
www.hse.gov.uk/construction/healthrisks/managing-essentials/health-surveillance.htm

Traffic Management Contractors Association (TMCA) Notes for guidance. Section 4, *Establishment, Alteration and Removal of Temporary Traffic Management Systems* TMCA 2014 www.tmca.org.uk/2014-notes-guidance

While every effort has been made to ensure the accuracy of the references listed in this publication, their future availability cannot be guaranteed.

Further information

For information about health and safety, or to report inconsistencies or inaccuracies in this guidance, visit www.hse.gov.uk/. You can view HSE guidance online and order priced publications from the website. HSE priced publications are also available from bookshops.

This guidance is issued by the Health and Safety Executive. Following the guidance is not compulsory, unless specifically stated, and you are free to take other action. But if you do follow the guidance you will normally be doing enough to comply with the law. Health and safety inspectors seek to secure compliance with the law and may refer to this guidance.

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This document is available at: www.hse.gov.uk/pubns/conindex.htm.