

# 18

## chapter 18 Roadworks

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## 18.1 Introduction

Temporary traffic management arrangements are necessary to allow a variety of works on or near the road, for example:

- routine and major road maintenance
- construction and improvement of roads
- work on services such as public utilities that are buried in the road
- construction and demolition of buildings and structures close to a road

These works can vary from minor street works requiring a short-term temporary lane closure to major traffic management on motorways or dual carriageways lasting several months.

Road authority staff and others involved in the planning and implementation of roadworks must have due regard for the safety of all road users and site workers during the roadworks. The organisations involved have legal responsibilities to the public and to construction employees and these are outlined below.

The responsibility for roadworks generally rests with the client for the works. Where this is not the road authority, the client will need permission from the road authority for certain activities, for example restricting road widths and controlling traffic.

## 18.2 Planning and control of roadworks

### Legislation and guidelines

The Road Traffic Act 1961 (Section 101D as inserted by Section 9 of the Dublin Transportation Authority (Dissolution) Act, 1987) enables a designated local authority to issue Directions to persons carrying out roadworks in its area. The Directions may specify:

- the times when roadworks shall or shall not be carried out
- the period within which roadworks shall or shall not be carried out
- standards of temporary and permanent reinstatement
- requirements for traffic control at roadworks

Dublin Corporation has issued guidance on roadworks contained in Directions for the Control and Management of Roadworks in Dublin City, 1999<sup>1</sup>. The document contains advice to those undertaking roadworks in the Dublin City area. This document includes advice on:

- restrictions on roadworks for various categories of road
- the way in which the council needs to be notified of works
- the way in which roadworks should be signed
- the ways in which the safety of all road users should be assessed

The document has a number of sample forms that need to be completed and submitted to the Corporation.

The Department of the Environment and Local Government issued Guidelines for the Opening, Backfilling and Reinstatement of Trenches in Public Roads<sup>6</sup> in April 2002. This document sets out a summary of the legal framework relating to powers of Road Authorities, various statutory bodies and private individuals in opening or forming trenches in public roads in Ireland. It prescribes standards in respect of the work of forming trenches, backfilling and the reinstatement of road surfaces and the associated materials which should be used.

### Safety and Health Plans

The purpose of a Safety and Health Plan is to minimise the risk to site operatives. Under the "Safety, Health and Welfare at work (Construction)

Regulations, 2001<sup>2</sup>”, a Safety and Health Plan is required for planning, design, construction and demolition of many projects that will require works to be carried out on public roads. The Safety and Health Plan should cover the planning and execution of the construction phase, which will include any necessary roadworks together with any appropriate assessments of particular risks. Information on the content of such plans is outlined in "Safety, Health and Welfare at work (Construction) Regulations, 2001<sup>2</sup>". This sets out a range of known possible risks and states that control measures to deal with these should be set out clearly. Details of how the regulations affect different types of construction works are also set out in this document.

### Planning for roadworks

At an early stage it is necessary to determine which other organisations may need to be involved. For example:

- Road Authority
- An Garda Síochána
- Emergency services
- Public transport operators
- Businesses
- Healthcare establishments
- Education establishments
- Road user organisations
- Public utilities

The planning objective is to complete the work safely and efficiently with as little delay as possible. It should be clear to all road users what they are required to do as they approach and travel through the roadworks.

### Issues to consider

The following issues should be considered when planning road works:

- Location of site and nature of work
- Local characteristics of the road section, including horizontal and vertical alignment and visibility

- Specific site characteristics, including road width, speed limit, dual or single carriageway works, and street lighting
- Traffic characteristics, including volume, turning traffic, the traffic mix, traffic speeds
- The number of pedestrians, with particular concern for children, and those with mobility difficulties
- The needs of cyclists and bus users, the position of bus stops in relation to the works
- The need for any site accommodation for workers
- Site constraints such as narrow footways
- Special local events, holidays
- Local amenities and businesses that might be affected
- School crossing patrols
- Any requirement for off-carriageway works
- The requirement for mandatory or voluntary diversions, road closures
- The requirement for temporary traffic lights, temporary speed limits, or "Stop/Go" boards
- The requirement for authorisation of any special signs
- The requirement for any restriction of hours of work – day/night

In the Dublin City area all the roads have been graded into four categories according to their importance as strategic traffic routes. The grading of the route determines the times at which roadworks may not be carried out.

On category 4 roads (the busiest roads) for example, works are not allowed to take place between:

- 07.00 to 19.30, Monday to Wednesday
- 07.00 to 21.00, Thursday and Friday

On category 1 roads (the least busy) for example, works are not allowed to take place between:

- 23.00 to 07.00, Monday to Friday
- 23.00 to 09.00, Saturdays, Sundays and Public Holidays

## 18.3 Temporary traffic management arrangements

Chapter 8 of the Traffic Signs Manual 1996<sup>3</sup> specifies the signs that can be used at roadworks and describes a variety of layouts for common types of roadworks.

Roadworks are divided into two main categories:

- short term roadworks – works of a minor nature which will be completed in a day or works of a mobile nature such as routine road maintenance, manhole inspection and public lighting maintenance
- long term roadworks – where excavations will be left open for more than a day

### Minimum road widths for traffic

It is necessary to provide sufficient width for the site operatives to work safely in and allow routine operations such as excavation and removal/ delivery of materials. Safe access points will need to be identified for these purposes. It will be necessary to provide adequate width for traffic to pass the works safely.

The minimum road widths required for various traffic situations recommended in Chapter 8 of the Traffic Signs Manual are:

- two-way traffic operation – 5.5m (if less than 5.5 the road should be narrowed to not more than 3.7m to discourage two-way operation).
- single lane operation (either one way or alternating with traffic control) 3.0m (2.5m if car traffic only)

In urban areas, for one-way shuttle working, three methods of control are outlined:

- "give and take" – on lightly trafficked minor roads where the length of single lane operation is less than 50m and both ends of the works are intervisible
- a "stop/go" board where the length of single lane operation is up to 100m (a stop/go board is required at both ends if the length of operation is greater than 20m) and operates in daylight hours only
- vehicle actuated (not fixed time) temporary traffic signals where the other two methods are unsuitable



Stop/go board control



Temporary traffic signal control

Further advice is given in Chapter 8 of the Traffic Signs Manual<sup>3</sup>. The cycle time for such works should be kept to a minimum.

On higher speed roads a buffer zone should be provided between the work zone and the road on which there is live traffic. This provides for a margin of safety between traffic and workers. This space should be kept free of workers, materials and vehicles.

### Pedestrian routes

The needs of pedestrians need to be taken into account. It may be necessary to make specific provision for schoolchildren, visually and mobility impaired road users.

A safe alternative route for pedestrians must be provided if the footway is to be closed. Pedestrian access to property must also be maintained. In some cases temporary footways will have to be marked out within the road and they must be adequately signed and protected. Temporary footways should be at least 1m wide, preferably 1.5m or more. They should be marked out with pedestrian barriers that include a handrail and a tapping rail (for blind or partially sighted people). The temporary pedestrian route should be assessed and any hazards such as scaffolding poles should be highlighted. A headroom clearance of 2.1m should be achieved.

Where pedestrian crossings are closed as part of roadworks, it is important to ensure that barriers are placed across the accesses to the crossing, and that signs facing pedestrians are erected to state that the crossing is not in use. Signal controlled crossings should be switched off, and zebra beacons switched off or covered.

### Cyclists and Motorcyclists

It is important in a built up area that cyclists/motorcyclists are specifically catered for in a roadworks scheme. Poor surfaces, narrow traffic lanes and ineffective enforcement of speed reductions may lead to unacceptable road conditions for these users.



Temporary footway

## Detours

If a road has to be closed for a period during the roadworks or sufficient road width to cope with traffic cannot be maintained then detours may be required. When planning traffic detours the following should be considered:

- keeping detour routes as short as possible
- ensuring that routes for diverted traffic are suitable and can cope with the additional traffic
- ensuring that the signing for diverted traffic is clear, consistent and is maintained

When detours are required, advance notification of the detour route and period of operation should be made in local newspapers and by notices along the road affected should be made. This can forewarn drivers and help to ease the initial congestion that often occurs when a detour is first implemented.

## Minor works carried out from a vehicle

Certain types of work such as gully cleansing, grass cutting, road marking, etc. are more suited to being carried out in a mobile way rather than a fixed way because the length of road covered in a the period of the works is much greater.

Cones and barriers are omitted and static signing may be provided only at the start of the works. Table 8.1 in Chapter 8 of the Traffic Signs Manual<sup>3</sup> gives details of the levels of warning required for mobile works.

The main options are:

- No signing
- Road works signs on vehicles, strobe lighting in poor visibility
- One flagman with or without signs on vehicle and strobe lighting
- Fixed signing

## Monitoring the road works

Operational effects of the road works should be monitored periodically throughout the duration of the works. Regular checks should be made to ensure that

the build-up of stationary traffic is minimised. Out-of-hours inspections should be made to ensure that the works are maintained in a safe condition for all road users. Contact telephone numbers should be displayed at the road works for people to report any problems with the traffic control or safety of the site.

The operation of long term road works and any resulting problems should be reviewed at progress meetings between the Client's representative, Contractors and other interested parties.

## 18.4 Designing to minimise the need for road works

Although road works are a necessary aspect of any maintenance programme, it is worth considering some of the steps that can be taken during the design of road schemes that would help to minimise the need for unnecessary road works or temporary traffic restrictions in the future.

Road works are a potential hazard in terms of road traffic accidents, particularly where long-term traffic management is applied to high volume high-speed roads. Studies have shown that:

- During 1998 there were 10 fatal road accidents and 190 injury accidents at road works in Ireland. (Road Accident Facts Ireland, 1998<sup>4</sup>)
- The personal injury accident rate at motorways road works sections is 57% greater than on non-works sections (TRL Project Report 37<sup>5</sup>)
- The personal injury accident rate at road works on dual 2 lane carriageways is 20% greater than on non-works sections (TRL Project Report 37<sup>5</sup>)

## Opportunities to "design out" future road works

Giving consideration to maintenance issues within the design of road schemes could avoid some of the requirement for road works in future years.

Some examples are given below:

- Traffic signals are installed sometimes without consideration of how the service engineer can safely access the controller. Signals are occasionally placed in such a position that they can only be accessed from a ladder in the running carriageway
- Grass is often planted in the central reserves of dual carriageways and motorways and then several times a year the road authority has to cone-off adjacent running lanes to cut the grass. This is a risk to operatives and to road users travelling through the works. Even cutting grass on nearside verges can be a high risk operation on some roads
- Consideration should be given to hard surface central reserves where steel barrier is used. This eliminates the need for grass cutting, positive drainage can be provided, litter blows away to the sides and therefore does not need people to pick it up in a danger zone
- Steel barriers are placed in central reserves, requiring lane closures for repairs to be carried out when the barrier has been breached. In some situations concrete barrier could be employed as an alternative
- Building new roads with services under the carriageway should be discouraged. Ducting systems should be provided under the footway, or in association with planting strips if these are required.
- Lamp columns should be at the back edge of the footway. This allows the use of footway and verge by occasional maintenance vehicles freeing up highway space and lessening operative danger

Roadworks can be avoided in some cases by early consideration of future maintenance issues within the design of schemes.

## 18.5 References

1. Directions for the Control and Management of Roadworks in Dublin City, 1999 – Available from Dublin Corporation Roadworks Control Section
2. Safety, Health and Welfare at Work (Construction) Regulations, 2001 – Available from the Health and Safety Authority
3. Traffic Signs Manual (Chapter 8), 1996, Department of the Environment and Local Government – Available from Government Publications Sale Office, Sun Alliance House, Molesworth Street, Dublin 2, or by mail order 4–5 Harcourt Road, Dublin 2 (Tel 01 6613111 ext. 4040/4045, Fax 01 4752760
4. Road Accident Facts Ireland, 1998 – National Roads Authority. Available from NRA, St Martin's House, Waterloo Road, Dublin 4, Ireland
5. TRL Project Report 37, 1993 – A review of the accident risk associated with major roadworks on all-purpose dual carriageway roads – Available from TRL, Tel. +44 1344 770783/84
6. Guidelines for the Opening, Backfilling and Reinstatement of Trenches in Public Roads, 2002. Available from the Non-National Roads Section, Department of the Environment and Local Government, Findlater House, Dublin 1. Tel. 01-888 2273