

Best practice in street works and highway works

April 2001

Department of the Environment, Transport and the Regions

London: The Stationery Office

Department of the Environment, Transport and the Regions
Eland House
Bressenden Place
London SW1E 5DU
Telephone 020 7944 3000
Internet service <http://www.detr.gov.uk/>

© Crown Copyright 2001

Copyright in the typographical arrangements and design vests in the Crown

Extracts of this publication may be made for non-commercial in-house use, subject to the source being acknowledged.

*Applications to reproduce the material in this publication should be addressed to The Copyright Unit, Her Majesty's Stationery Office, St Clements House, 2-16 Colegate, Norwich NR3 1BQ.
Fax 01603 723000 or email copyright@hmso.gov.uk*

First published March 2001

ISBN 0 11 552309 X

Printed in Great Britain for The Stationery Office on material containing 75% post-consumer waste and 25% ECF pulp.
TJ003731 C30 03/01 10170

FOREWORD

by Keith Hill MP, Parliamentary Under-Secretary of State,
Department of the Environment, Transport and the Regions



It has become increasingly clear in recent years that there is a level of disquiet about the way in which street works, particularly but not exclusively in London and other major conurbations, are affecting already congested streets. At the same time, the Government cannot ignore the fact that there are a number of coexisting rights at issue, and that a balance must be struck between them.

Undertakers – whether in the gas, water, electricity, telecommunications or other fields – have statutory rights (in many cases going back for more than a century) to carry out street works as part of providing the public with services which are seen as essential in a modern society. Highway Authorities' works are essential for the building of new infrastructure and to maintain the structural integrity of existing streets. Nevertheless, pedestrians, cyclists, private motorists, travellers on public transport and other road users are entitled to expect the minimum disruption from these necessary activities. This is particularly true for disabled people who are amongst those most likely to be seriously disadvantaged by disruptions.

The New Roads and Street Works Act (NRSWA) 1991 provides a legislative framework for street and highway works activities, and it is supported by Regulations and Codes of Practice. A number of measures have already been introduced to encourage improvements in the planning and execution of street works and to help to minimise the disruption, notably a scheme under section 74 of the Act to charge undertakers who fail to complete works within the timescale agreed between the highway authority and themselves.

However, the Government believes that good example is just as important as sanctions in encouraging improvements. Accordingly, this Best Practice Guidance has been prepared with the needs of both undertakers and street authorities in mind. It aims to draw their attention – and that of road users in general - to examples of best practice in all aspects of street works from different parts of the country.

I should make clear that the guidance – which was prepared by a working party comprising representatives of my Department, highway authorities and the undertakers - is intended to complement the existing Codes of Practice produced by the Highway Authorities and Utilities Committee (HAUC) on matters such as co-ordination of works, and not to supersede them. As a 'living' document that will periodically be updated to reflect current practice, it should lead to continuous improvement in line with Best Value legislation.

I welcome this Best Practice Guidance, which I hope will stimulate all concerned (highway authorities, undertakers, contractors and, indeed, interested members of the public) to identify where improvements are needed at their own local level and start in train the means of achieving them. I see this as an important step in reducing overall disruption - an outcome that is in everybody's interest.

A handwritten signature in black ink that reads "Keith Hill".

Keith Hill MP

ACKNOWLEDGEMENTS

The Best Practice Guidance was prepared by a working party of the Department of the Environment, Transport and the Regions (DETR) and was the subject of consultation with interested stakeholders. The following organisations, utility companies and highway authorities were represented on the Working Party.

The National Joint Utilities Group (NJUG)	Irene Elsom
The Local Government Association (LGA)	Graham Eaton
The Department of the Environment, Transport and the Regions (DETR)	Tim Barrow

Regional Highway Authorities and Utilities Committee (HAUC) representatives

Anglian HAUC	Stuart Admans (Cambridgeshire County Council)
London HAUC	Jim Blewett (THUS Telecommunications)
London HAUC	Peter Loft (Thames Water)
South East HAUC	Kevin Fuller (Hampshire County Council)
West Midlands HAUC	Michael Bishop (Birmingham City Council)
West Midlands HAUC	Bob Allan (Advantica)

Utility Company representatives

British Telecommunications plc	Dave Turnbull
Cable and Wireless	Harry Pendleton
Ntl	Jim Master

Consultant to the DETR

TRL Limited	Marilyn Burtwell
-------------	------------------

CONTENTS

INTRODUCTION	7
STREET WORKS AND HIGHWAY WORKS CO-ORDINATION	7
Principles of Best Practice in Co-ordination	
Works Notices	
WORKS PLANNING, CONSULTATION AND CO-ORDINATION	10
Preliminary Actions	
Consultation	
Duration of the Works	
Co-ordination of the Works	
Impact of the Works	
WORKING ON SITE	12
Advance Communication	
Identification of Works on Site	
Safety and Protection of the Works	
Courtesy and Consideration for the Public	
Protection of the Environment	
QUALITY OF REINSTATEMENTS AND HIGHWAY WORKS	14
PERFORMANCE MONITORING AND QUALITY AUDIT	15
NEXT STEPS	16
GLOSSARY	17
ANNEX A Examples of techniques to improve co-ordination and to minimise inconvenience and disruption	18
ANNEX B Quality of Reinstatements and Highway Repairs	22
ANNEX C Considerate Contractor Schemes	24
ANNEX D List of Publications	26

Best Practice in Street Works and Highway Works

Introduction

Growth in the economy, the introduction of competition into undertakers' services and increasing customer demand for essential services has brought with it increasing numbers of excavations in the streets in order to supply these services.

The increase in the number of undertakers licensed to lay mains and cables, within our streets, brings with it the increased potential for conflict between the undertakers who have the statutory rights to use the streets for provision of essential services, the highway authorities and others who maintain them, and those who use the streets for transport purposes who are also the recipients of those services.

In the interests of the community and the economy, it is important that the safe and efficient movement of traffic, pedestrians and cyclists is maintained on the streets and, also, in the vicinity of trams, light rail and level crossings. To facilitate this, this guidance, based on operational experience, provides principles and examples of best practice for the implementation of street works and highway works. Its aim is to help undertakers, highway authorities and other organisations carrying out works in the street to build on these principles in the future to avoid unnecessary disruption and inconvenience to highway users.

In particular, this guidance provides examples of best practice in street works, which build on the principles of the Highway Authorities and Utilities Committee (HAUC) Codes of Practice, and best practice in highway works under the Highways Act 1980.¹ The highway authorities, undertakers and the Department of

the Environment, Transport and the Regions (DETR) all agreed that such examples of best practice are desirable.

All involved in the planning, supervision, execution and monitoring of street works and highway works are encouraged to implement the works whilst carrying out their respective duties under the New Roads and Street Works Act 1991(NRSWA),² the Highways Act 1980 and health and safety legislation.

The document is intended to cover all works but specifically planned major works and planned maintenance and works on busy and strategic routes. It does not remove or affect the undertakers' or authorities' statutory rights to carry out emergency, urgent, provision and restoration of customer service or routine maintenance works. The guidance will periodically be updated to reflect current practice that will then encourage continuous improvement in line with Best Value legislation.

Street Works and Highway Works Co-ordination

Highway authorities should make a commitment to operate their own works within the principles of the NRSWA.

The main provisions of the NRSWA created duties for the street authorities to co-ordinate the execution of works of all kinds (including works for road purposes) and for undertakers to co-operate with street authorities and each other. The relevant sections from the Act are:

¹ Details of how to obtain copies of the Highways Act 1980 are given in Annex D.

² Details of how to obtain copies of the New Roads and Street Works Act 1991 are given in Annex D.

“A street authority shall use their best endeavours to co-ordinate the execution of works of all kinds (including works for road purposes) in the streets for which they are responsible.”
Section 59 (1)

“That duty extends to co-ordination with other street authorities where works in a street for which one authority are responsible affect streets for which other authorities are responsible.”
Section 59 (2)

“An undertaker shall as regards the execution of street works use his best endeavors to co-operate with the street authority and with other undertakers.” Section 60 (1)

The co-ordination function contained in the statutory Highways Authorities and Utilities Committee (HAUC) Code of Practice for the ‘Co-ordination of street works and works for road purposes and related matters’, hereinafter referred to as the HAUC Code of Practice,³ applies nationally to all highway authorities and undertakers. A street authority must co-ordinate the execution of works in their highways to comply with the requirements contained in the HAUC Code of Practice. The objectives of this co-ordination are equally:

- to ensure safety;
- to minimise inconvenience to people using the streets, including those who have a disability; and
- to protect the structure of the street and the apparatus in it.

Co-ordination particularly applies to:

- planned utility and highway works/ major projects;
- all works on heavily-trafficked routes;
- strategic routes on a network basis;
- all works in pedestrianised areas;

- street works licensees; and
- licences issued by the highway authority, eg developers, scaffolding, skips and cranes etc.

PRINCIPLES OF BEST PRACTICE IN CO-ORDINATION

In carrying out street works and highway works, the key elements of co-ordination are good information, good communications, good planning and flexibility. There is no substitute for developing good working relationships.

The key principles of effective co-ordination are:

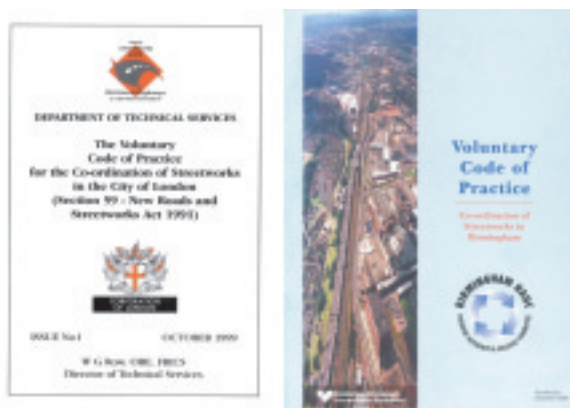
- early consultation between all interested parties, adequate pre-planning and, where circumstances allow, flexibility. These are essential if effective co-ordination is to be realised for all parties and their respective customers;
- regular input and attendance of relevant personnel (those who are also authorised to vary programmes) at co-ordination meetings. Attendance is vital to ensure that all parties understand the need to meet key dates for planned works or risk having projects aborted or delayed. The success of effective co-ordination depends on co-operation between all parties, the highway authorities, the undertakers and their contractors, and developers;
- whenever possible, that undertakers should share business development plans and the locations and replacement programmes for ageing apparatus with the authorities. All information should be treated with the strictest confidence;
- to improve cross-boundary co-ordination between neighbouring authorities, undertakers and others for all planned works and planned maintenance on strategic routes;
- when major works are planned in the area of a principal route, it may be advantageous

³ Details of how to obtain copies of the HAUC Code of Practice are given in Annex D.

to select an alternative route in the area that, for a known period of time, will be kept clear of planned works to avoid unnecessary inconvenience and to which road users can be diverted.

In applying these principles, all parties should recognise the need for flexibility within their operations. The following are examples of existing best practice guidelines for effective co-ordination:

- ◆ The Voluntary Code of Practice for the Co-ordination of Street Works in the City of London.⁴
- ◆ The Central London Partnership - Making Street Works Work – Voluntary guidelines for the enhanced co-ordination of street works in Central London.⁵
- ◆ Birmingham City Council Considerate Contractor Street Works Scheme – Code of Practice.⁶



Examples of best practice guidelines in operation for effective co-ordination

(Sources: City of London, Central London Partnership and Birmingham City Council)

Extract from *Making Street Works Work* – Central London Partnership, which describes ‘pairing of routes’ for planned routes to avoid unnecessary inconvenience and disruption

‘The principle of the Voluntary Guidelines to be adopted are:

3. The principal routes have been selected as pairs wherever possible (north-south; east-west) to be utilised, if possible, whenever major works are underway.

4. The objective will be to try and keep one of the alternative routes in any one pair clear of major works during any six-month period (or longer if possible) and to avoid major works occurring at the same time to “paired routes”.’

WORKS NOTICES

Notices are produced by an undertaker to give the street authority advance notice of certain works (NRSWA, section 54) and notice of the starting date of the works (NRSWA, section 55). Notices also facilitate the provision of a record of the life cycle of all works and the inspection of those works. Equally, highway authorities should inform undertakers about:

- their own works;
- restrictions on undertakers’ works following substantial road works (NRSWA section 58); and
- a ‘return path’ for NRSWA section 74 notices.

The key points to remember, for those producing notices, are:

- to deliver notices as soon as possible within the time frame allowed for each

⁴ Details of how to obtain copies of the City of London Voluntary Code of Practice are given in Annex D.

⁵ Details of how to obtain copies of the Central London Partnership guidelines are given in Annex D.

⁶ Details of how to obtain copies of the Birmingham City Council Considerate Contractor Street Works Scheme – Code of Practice are given in Annex D.

type of works, eg major projects for discussion at co-ordination meetings have a minimum of three month's notice;

- to provide clear information, free of jargon so that there is no confusion over what is intended;
- to provide accurate and updated site location details;
- to use Ordnance Survey Grid References (OSGRs) where available; and
- to cancel notices if works are abandoned or deferred.

Works Planning, Consultation and Co-ordination

PRELIMINARY ACTIONS

The following preliminary actions are intended to improve the planning and design of works:

- liaison between highway authorities, undertakers, transport authorities, police and contractors to review traffic management requirements, eg road closures and temporary traffic orders;



Interactive works planning tool
(Source: Cambridgeshire County Council)

- reference to plant records and, where available, to digital map records using the exchange of plant details electronically via the Internet. This will facilitate the provision of up-to-date information and improve safety and damage prevention;
- where appropriate, the use of ground penetrating radar (GPR) or three-dimensional mapping systems to locate apparatus and available ground capacity;
- where appropriate, the use of trial holes to identify potential problems prior to start of works. The results should be made available to all interested parties;
- calculating the likely duration of works from historic progress rates to develop a preliminary programme of works;
- a review of the variety of techniques available for the installation of apparatus and the maintenance of the highway;
- the use of trench sharing as an effective method of reducing disruption and inconvenience from street works;
- if possible, the use of verges as a location for apparatus. If the verge is outside the highway boundary, permission from the landowner may be needed;
- special provision at the development stage to landscaped areas, Sites of Special Scientific Interest (SSSI), ancient monuments, Countryside Protection programmes, adopted service strips and roundabouts; and
- where appropriate, reviewing work to determine whether it could be carried out outside normal working hours, to avoid delays and disruption. Remember, however, that environmental factors such as noise levels need to be taken into account.



A typical co-ordination meeting with attendance by undertakers and highway authorities who discuss street works and highway authority works issues

(Source: Ntl)

CONSULTATION

Consultation should be used where practicable to assess the impact of the proposed works, to assist the design process and to encourage improved co-ordination between the undertakers, highway authorities and other interested parties. Examples are:

- consultation with landowners, developers and businesses about the potential impact of the proposed works;
- liaison with other services - town councils, parish councils, Chambers of Commerce, emergency services, local bus, tram, and rail operators, the local community, local business representatives and environmental health bodies as appropriate;
- notification to local residents in advance about the works and, where appropriate, during the progress of the works. Provision of a dedicated 24-hour contact telephone number;
- publication of the timing of the works in the media, when appropriate; and
- public consultations (where appropriate) at open meetings of local residents / businesses by the undertakers' community affairs public relations representative.

DURATION OF THE WORKS

The introduction of additional notice types for the implementation of section 74 of NRSWA should enable works to be better planned and provide better information for street authorities to plan their inspections and co-ordinate works. These notices contain the actual start date, the agreed duration and the completion date of the works.

CO-ORDINATION OF THE WORKS

The HAUC Code of Practice gives practical guidance to:

- (i) the street authority on the exercise of their powers to give directions as to the timing of street works (*NRSWA, section 56*);
- (ii) the street authorities and undertakers as to the discharge of their duties with respect to co-ordination and co-operation (*NRSWA, sections 59 and 60*); and
- (iii) the street authority on the duration and timing of the works for the purpose of charging for occupation of the highway where works are unreasonably prolonged (*NRSWA, section 74*).

In carrying out these duties, the following points are important:

- regular co-ordination meetings, with recorded actions, should be held between highway and planning authorities' representatives, undertakers, street works personnel, urban centre managers, business representatives and other interested parties to discuss proposed major works on the highway and the speedy resolution of any potential conflict or outstanding matters;
- street authorities should provide undertakers and relevant highway personnel with a meeting schedule for co-ordination meetings at least 12 months in advance;

IDENTIFICATION OF WORKS ON SITE

In the planning and day-to-day execution of the work on site, undertakers and highway authorities and their contractors should pay particular attention to the following:

- the display of appropriate and up-to-date information boards at the site of the work to provide information for the public regarding the works;
- the placement of the required number of boards and traffic signs on site in advance of works and for the full duration of the works; and
- the use of vehicle-mounted information boards for Type C Works, eg continuous mobile operations, gully emptying or line painting (see Chapter 8 of the *Traffic Signs Manual*⁷).



Example of an undertaker's information board
(Source: Birmingham City Council)

SAFETY AND PROTECTION OF THE WORKS

The *Safety at Street Works and Road Works – A Code of Practice*⁸ will help the undertakers and highway authorities and their contractors to safely carry out signing, lighting and guarding of all works on the highway.



Resurfacing of the carriageway within traffic management control
(Source: Cambridgeshire County Council)

During day-to-day execution of the work on site, particular attention should be paid to the following:

- provision of all necessary signing, lighting and guarding in good working order before the work commences, during the progress of work and outside normal working hours;
- provision of footway plates and ramps where appropriate;
- good housekeeping on site, eg tidy stockpiles of material adequately lit and guarded;
- maintenance and regular inspections of works outside normal hours; and
- the removal of equipment, materials and signs from sites immediately after completion of the works.



Best Practice in guarding of street works
(Source: NJUG)

⁷ Details of how to obtain a copy of the *Traffic Signs Manual* are given in Annex D.

⁸ Details of how to obtain a copy of the *Safety at Street Works and Road Works – A Code of Practice* are given in Annex D.

COURTESY AND CONSIDERATION FOR THE PUBLIC

During day-to-day execution of the work on site, undertakers and highway authorities and their contractors should:

- ensure that all information boards are in accordance with the Traffic Signs Regulations and General Directions 1994, Schedule 12;
- ensure that any information boards are of the appropriate design and that a contact telephone number and the start and end dates of the works (where possible) are displayed. The information they contain should be updated as necessary;
- ensure that any information boards do not obstruct the footway, other pedestrian routes or the carriageway; and
- appoint a designated contact point to respond to public enquiries.



Pedestrians negotiating street works
(Source: THUS Telecommunications)

PROTECTION OF THE ENVIRONMENT

All undertakers and highway authorities have a duty to protect the environment. Examples of best practice include:

- first time permanent reinstatement or highway repair where disruption will be minimised;
- environmental awareness in the selection and use of resources, waste management and the avoidance of pollution; and
- avoidance of damage to trees and shrubs, particularly to the roots, and verge damage by material storage.

Specific information about the excavation and reinstatement of openings in the vicinity of trees is given in NJUG Publication 10.⁹

Methods of carrying out highway works near trees are explained in *Roots and Routes: Guidelines on Highways Works and Trees*.¹⁰

Quality of Reinstatements and Highway Works

The quality of reinstatements and highway works can directly influence the life of the highway infrastructure. The materials used, the workmanship and the methods used to carry out excavations and reinstatements should be to the required standards given in the NRSWA *Specification for the reinstatement of openings in the highways – A Code of Practice*¹¹ to preserve the structure and integrity of the highway. In the case of highway works, the *Specification for Highway Works (SHW)*¹² and the Highway Authority's own Policy applies.

Reinstatements and highway works should be encouraged as *first-time* quality permanent reinstatements and repairs in order to maintain the fabric of the highway in as good a condition as possible and to minimise disruption and inconvenience to the travelling public. These should comply with the prescribed performance standards given in national specifications or to any agreed local

⁹ Details of how to obtain copies of the NJUG Publication 10 are given in Appendix D.

¹⁰ Details of how to obtain copies of *Roots and Routes: Guidelines on Highways Works and Trees* are given in Annex D.

¹¹ Details of how to obtain copies of the NRSWA Specification are given in Annex D.

¹² Details of how to obtain copies of the Specification for Highway Works are given in Annex D.

COURTESY AND CONSIDERATION FOR THE PUBLIC

During day-to-day execution of the work on site, undertakers and highway authorities and their contractors should:

- ensure that all information boards are in accordance with the Traffic Signs Regulations and General Directions 1994, Schedule 12;
- ensure that any information boards are of the appropriate design and that a contact telephone number and the start and end dates of the works (where possible) are displayed. The information they contain should be updated as necessary;
- ensure that any information boards do not obstruct the footway, other pedestrian routes or the carriageway; and
- appoint a designated contact point to respond to public enquiries.



Pedestrians negotiating street works
(Source: THUS Telecommunications)

PROTECTION OF THE ENVIRONMENT

All undertakers and highway authorities have a duty to protect the environment. Examples of best practice include:

- first time permanent reinstatement or highway repair where disruption will be minimised;
- environmental awareness in the selection and use of resources, waste management and the avoidance of pollution; and
- avoidance of damage to trees and shrubs, particularly to the roots, and verge damage by material storage.

Specific information about the excavation and reinstatement of openings in the vicinity of trees is given in NJUG Publication 10.⁹

Methods of carrying out highway works near trees are explained in *Roots and Routes: Guidelines on Highways Works and Trees*.¹⁰

Quality of Reinstatements and Highway Works

The quality of reinstatements and highway works can directly influence the life of the highway infrastructure. The materials used, the workmanship and the methods used to carry out excavations and reinstatements should be to the required standards given in the NRSWA *Specification for the reinstatement of openings in the highways – A Code of Practice*¹¹ to preserve the structure and integrity of the highway. In the case of highway works, the *Specification for Highway Works (SHW)*¹² and the Highway Authority's own Policy applies.

Reinstatements and highway works should be encouraged as *first-time* quality permanent reinstatements and repairs in order to maintain the fabric of the highway in as good a condition as possible and to minimise disruption and inconvenience to the travelling public. These should comply with the prescribed performance standards given in national specifications or to any agreed local

⁹ Details of how to obtain copies of the NJUG Publication 10 are given in Appendix D.

¹⁰ Details of how to obtain copies of *Roots and Routes: Guidelines on Highways Works and Trees* are given in Annex D.

¹¹ Details of how to obtain copies of the NRSWA Specification are given in Annex D.

¹² Details of how to obtain copies of the Specification for Highway Works are given in Annex D.

variations. Further important details about how to achieve quality reinstatements are given in Annex B.



Utility works carried out to the required standards given in the NRSWA Specification
(Source: THUS Telecommunications)



Good quality excavation and tidy work site
(Source: NJUG)



Good quality reconstruction work to the carriageway
(Source: London Borough of Bromley)

Performance Monitoring and Quality Audit

It is expected that all parties working in the highway for the purposes of excavation, reinstatement and repairs should operate a Quality Assurance System. These QA systems provide customers and the public with confidence that the works will be carried out in a defined manner that produces a quality product.

To supplement QA systems, checks on contractors' performance should also be undertaken at regular intervals on a random basis. One such example of a scheme is presented in the 'Birmingham City Council Considerate Contractor Street Works Scheme – Code of Practice' (see Annex C). Within the scheme, consistent high performance is identified and where practices do not meet the prescribed standards appropriate action is taken to improve them.

In conjunction with the quarterly results of the inspection procedures (see HAUC Inspections Code of Practice¹³), a quality audit would determine trends and provide an incentive to all undertakers and highway authorities towards continuous improvement in their practices. This is in line with Best Value legislation, which encourages highway authorities to adopt the same performance

¹³ Details of how to obtain copies of the Inspections Code of Practice are given in Annex D.



A first-time reinstatement in a busy main street that has been completed to a high standard

(Source: TRL Limited)

indicators thus enabling the benchmarking of their activities. It is recommended that the results of each audit be shared with all parties.

Next Steps

This Best Practice guidance document is commended to you as an example of how all parties involved in street works and highway works can work together to reduce disruption and inconvenience and maintain our highways in good order.

Finally, you are invited to become part of this ‘living’ document by submitting further examples of best practice to your regional Highway Authorities and Utilities Committee (HAUC). These examples will be reviewed for inclusion in future versions of the Best Practice Guidance.

BIRMINGHAM H.A.U.C. REINSTATEMENT PERFORMANCE MONITORING FORM

Company:	Auditors:			
NRSWA Ref. No:	Date:			
Address:				
	N/A	Tech Comp	Not Tech Comp but OK	Fail
Preparation				
Proof of NRSWA accreditation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gang are aware of correct class of road, and traffic sensitivity classification.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Excavation suitable for reinstatement (shoring/undercutting/free from debris/water).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Excavated or imported materials for re use, segregation/protection from weather etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Backfill/sub base				
Surround to Apparatus, suitable material and compacted.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Backfill materials have correct moisture content and particle size.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Correct compaction equipment in good working order.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Correct number of passes and depth for compaction equipment use.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Blacktop				
Edge requirements and trimming confirms to specification.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B/C material comply to specification.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
W/C material comply to specification.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Correct compaction equipment for blacktop and in good working order.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Correct number of passes for compaction depths detailed in British Standard.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Surface regularity.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chipping spread/Texture Depth/Surface Dressing.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Blocks/Modular/Slabs				
Type and depth of sand bed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Laid to correct bond, level, not rocking or damaged.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Correct use of granular/Class 1 mortar jointing sand around M/Hs & street furniture.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Verges/Planting areas				
Made level, and free from debris and stones.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Top soil depth, seeded, turf, planting.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Compliance with NJUG 10, work around trees.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Concrete				
Correct classification and reinforcement.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Top surface joints.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ancillary items				
Reset kerb to Birmingham HAUC Specification.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Existing Surface left free from staining, c/w road markings/site clear.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments				

Performance Score = _____

Performance monitoring form used to check workmanship has been carried out in a defined manner to prescribed standards

(Source: Birmingham City Council)

GLOSSARY

- Highway Authority** in England and Wales, means:
- in the case of trunk roads (which include most motorways), the Secretary of State for the Environment, Transport and the Regions or the Secretary of State for Wales;
 - in the case of all other roads maintainable at the public expense, the County Council, Metropolitan District Council, London Borough Council, or Common Council of the City of London in whose area the road is situated.
- Major Highway Works** are works, which have been identified specifically in the annual operating programme of the undertaker or highway authority, or which would normally be planned to commence at least 6 months in advance.
- Street** in England and Wales, means the whole or any part of any of the following, irrespective of whether it is a thoroughfare:
- (a) any highway, road, lane, footway, alley or passage;
 - (b) any square or court; and
 - (c) any land laid out as a way whether it is for the time being formed as a way or not.
- Street Authority** in relation to a street means the highway authority in the case of maintainable highway, or if the street is not a maintainable highway, the street managers.
- Street Works Licence** in England and Wales, means a licence granted by a street authority to a person to carry out street works.
- Undertaker** means the person in whom statutory right to execute street works is vested, or the licensee under the relevant street works licence.

ANNEX A

Examples of techniques to improve co-ordination and to minimise inconvenience and disruption

Undertakers' Works and Highway Works

(i) Trench sharing

Trench sharing can be effective in reducing disruption from street works. If trench sharing is used, it should include:

- a definition of the location and limit of trench sharing;
- determination of the primary undertaker and a deputy undertaker who will be responsible for the site;
- agreement on the responsibility for contact points and liaison, site management, extent of supervision by each party, notices, reinstatement and any performance issues during the works and after completion;
- determination of the configuration of apparatus and means of identification. This will apply to proposals for separating boxes and equipment and communal boxes; and
- agreement on a combined public relations strategy.



Trench sharing carried out by the telecommunications company THUS

(Source: THUS Telecommunications)

Advice from Nottingham City Council regarding trench sharing:

“Co-ordination is far more than attempting to separate and sequence works so that one activity does not interfere with another. In many locations, activities should be grouped together and carried out as a much larger co-ordinated operation as is common practice for highway maintenance on major routes.

Every opportunity should be taken to identify occasions when sharing of road space may be appropriate. This may extend to trench sharing or simply combining separate operations into a single site or coordinated sites. Typical opportunities / examples include the provision of new services to development sites where a single contractor may install services for a number of different utilities in a single trench or more major works for the installation of new networks for different operators from a single utility industry.

Care must be taken to ensure that the balance is achieved between reducing the number of occasions that small works take place and increasing the scale of the combined works. The overall disruption may increase due to combining works since the larger scale of installations may move the works from verge / footway to carriageway and the time of works may need to extend into peak traffic periods rather than being possible at off-peak times only.”

(ii) Trial excavations

Undertakers and highway authorities should excavate trial holes, where appropriate, to identify potential problems prior to the start of works. This information should be shared with other undertakers and highway authorities where possible. Due care and attention should be taken when excavating and maintaining services in proximity to highway structures (see Appendix G in the HAUC Code of Practice).

(iii) Detecting apparatus

As undertakers and highway authorities move increasingly to the use of digital map records, there is the opportunity to exchange records information via the Internet. This should facilitate the provision of up-to-date records and improve safety and damage prevention.

Due regard should be given to the advice in the Health and Safety Guidelines (HSG47)¹⁴ when detecting the location of underground apparatus and the available ground capacity. Methods of detection may include:

- Cable Avoidance Tools (CAT); and
- Ground Penetrating Radar (GPR), where appropriate, or 3-dimensional mapping systems.



Use of the Cable Avoidance Tool (CAT) to locate underground services
(Source: NJUG)



Ground Penetrating Radar (GPR) equipment for the location of underground apparatus
(Source: McNicholas Construction Group)

Techniques that are helpful to undertakers and highway authorities in locating apparatus and in minimising disruption, by more efficient working with less accidents and damage, include:

- obtaining plans or other information about all buried services in the area. The use of 'one call' systems is recommended where they exist.

(iv) Geographical Information Systems (GIS) systems

Increasing use of Ordnance Survey Grid References (OSGRs) (National Street Gazetteer Level 3 – BS7666: Part 3)¹⁵ should improve the accuracy of information contained in works notices. In conjunction with more advanced Global Positioning Systems (GPS), more accurate location of apparatus should be possible.

(v) Photographic records

A photographic record (preferably date stamped) or a video of the site condition would be a helpful site record prior to works, during works in progress and at locations where inspections are needed. It would serve as a useful adjunct to the works systems.

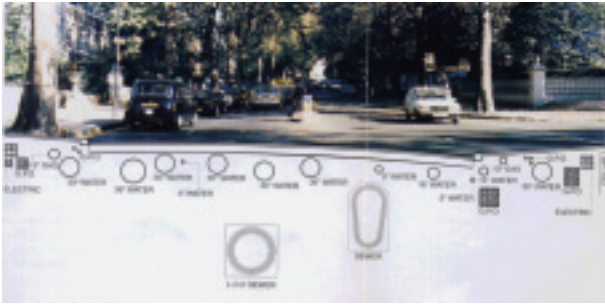
(vi) Trenchless technology

The installation of underground apparatus using trenchless methods is an alternative method to open cut excavation. The following points should be remembered:

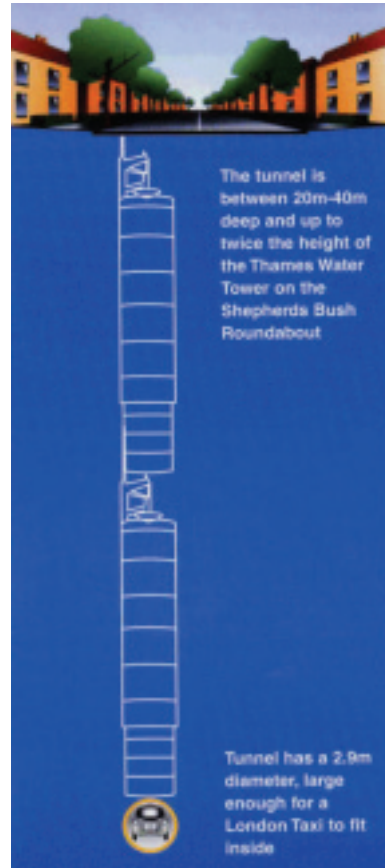
- assess the viability and suitability of using trenchless techniques at the planning stage;
- assess the risks of using trenchless techniques in areas where pipes and cables are congested; and
- assess the use of trenchless techniques in pipe re-lining, re-use of redundant pipes, ducts, and existing service subways.

¹⁴ Details of how to obtain copies of the HSG47 Guidelines are given in Annex D.

¹⁵ Details of how to obtain copies of BS7666: Part 3 are given in Annex D.



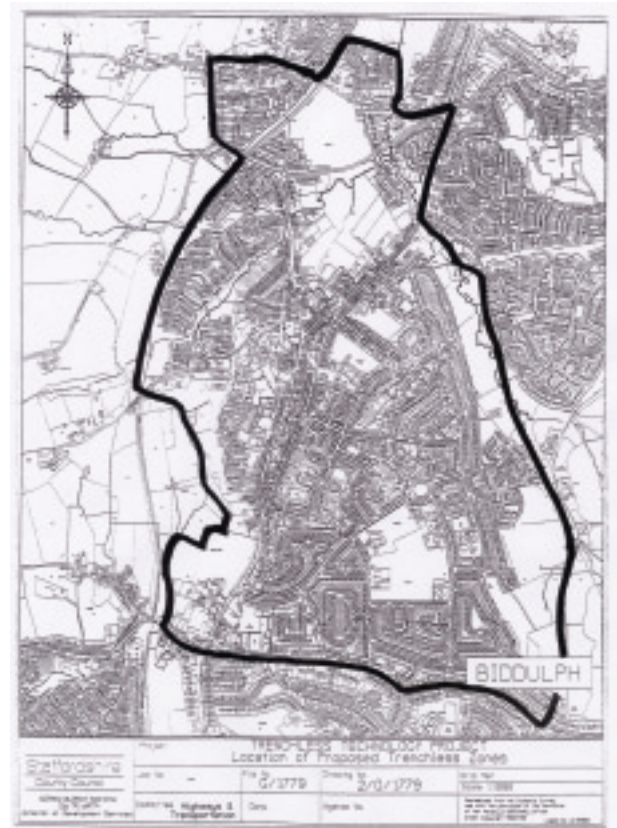
Replacement of eight water mains that run under Holland Park Avenue with two new mains in a deep tunnel
(Source: Thames Water)



Schematic diagram of the deep tunnel shaft which reduced surface road works, created less noise and was environmentally cleaner
(Source: Thames Water)



No disruption to traffic flow whilst trenchless methods are used below ground
(Source: Thames Water)



Detailed street map showing the boundary of the 'no-dig' zone in Biddulph
(Source: Staffordshire County Council)

(vii) Keyhole techniques

Recent advances in technology have increased the usage of new techniques such as 'keyhole' excavation of openings in the highway. This method reduces the amount of excavation, thereby reducing disruption at sites.



Excavation carried out by 'keyhole' surgery
(Source: Transco)

ANNEX B

Quality of Reinstatements and Highway Repairs

Under section 71 of the NRSWA, an undertaker executing street works must, when reinstating a street, comply with the appropriate specifications for materials to be used and ensure that the standards of workmanship are observed. When carrying out maintenance work to the highway, authorities should also ensure that their works are carried out to a high standard.

The main objectives are:

- to maintain the structural integrity of the highway infrastructure and the integrity of third party apparatus;
- to produce a quality permanent reinstatement and highway repair which complies with the performance criteria; and
- to ensure the long-term performance of the highway structure.

These can be achieved by:

- provision of proper training for operatives and supervisors, and by encouraging operatives to take ownership of the works;
- use of innovative excavation, reinstatement and repair methods that reduce site occupancy;
- use of the appropriate equipment and materials including recycled materials and re-processed materials where appropriate, eg Cement Bound Excavated Materials (CBEMs);
- use of innovative materials, for special circumstances, eg Permanent Cold Lay Surfacing Materials (PCSMs) and foamed concrete;

- compliance with the calibration and operational compaction requirements and end performance specifications; and
- use of first-time permanent reinstatement and highway repairs, where practicable.



Good compaction technique used on typical asphalt material
(Source: TRL Limited)

Benefits of first-time permanent reinstatement and highway repairs are:

- reduced quantities of primary aggregates;
- reduced traffic and haulage movements;
- reduced landfill and tipping of waste materials;



Crushing and grading of material from utility and road excavations for re-use in reinstatements
(Source: North West Water)



Crushed and graded material from road excavations suitable for re-use as backfill or sub-base in utility trenches

(Source: North West Water)

- reduced pollution, eg dust, fuel emissions and noise;
- fewer public complaints regarding site works; and
- reduced disruption and inconvenience.

ANNEX C

Considerate Contractor Schemes

A number of highway authorities and undertakers have developed Considerate Contractor Schemes, which demonstrate a willingness to work together for the public good. Examples of actions to inform the public about the works before they start are given below.



Example of information boards used by Birmingham City Council
(Source: Birmingham City Council)



Example of information board and use of two-way traffic for road users (Telia)
(Source: THUS Telecommunications)

Complaints and Public Satisfaction

Public satisfaction is the 'cornerstone' of Best Value, so the undertaker or highway authority should deal promptly and courteously with any direct complaints received from the public.

Customer satisfaction could be measured in various ways, eg public opinion polls, telephone interviews, analysis of compliments and complaints or by audit performance checks of safety and quality as work is in progress.

During and following the completion of the works (especially large or disruptive works) undertakers should consider further communication with all affected parties to assess how well the works are being conducted or were conducted and how well contractors behaved on site.

Performance Monitoring and Assessment

The purpose of performance monitoring is to identify where improvements can be made, to encourage continuous improvement, to encourage partnership working and to provide data for quality audits. See also the earlier paragraphs on quality of reinstatements and repairs in the section on monitoring and quality audit.

Audit checks and performance monitoring do not, in any way, supersede the normal inspection procedures under the New Roads and Street Works Act.

PERFORMANCE MONITOR FORM						
Site	Contractor					
Date	Time	Type of work				
Form Completed by (Name)	Location		Signature			
FACTOR	PERFORMANCE					COMMENTS
	GOOD	SATISFACTORY	UNSATISFACTORY	POOR	NA	
1 SAFETY*	Please tick appropriate					
Signing/guarding/lighting						
Signs						
Safety Zones						
Traffic Control						
Pedestrian Control						
Information Boards						
Site Fitness						
Incidence of Underground Apparatus						
2 CUSTOMER LIAISON/ INFORMATION						
Liaison during works						
Maintenance of accesses						
3 QUALITY OF WORK/ SPECIFICATION COMPLIANCE						
Work in Progress						
Finished Works						
Protection of Environment						
Progress (excluding those closed to traffic)						
General Comments					JOB DIFFICULTY WARNING Please tick appropriate EASY 0.0 AVERAGE 1.0 DIFFICULT 1.1	SCORE ACHIEVED
*SCORES Good 4 Performance easily meets or exceeds requirement Satisfactory 3 Performance meets requirements Unsatisfactory 2 Performance below requirements Poor 1 Performance well below requirements If a below satisfactory score is returned under SAFETY then a zero overall score will be given						

Performance assessment form designed and used by Birmingham City Council, undertakers and contractors
(Source: Birmingham City Council)

Regular assessments could be made to commend contractors whose performance is consistently satisfactory, to encourage contractors whose performance has been unsatisfactory to improve, and to recommend appropriate action against undertakers' contractors who consistently fail to meet the standards prescribed within the NRSWA and its relevant Codes of Practice.



A telecommunications installation completed to a high standard of quality in compliance with the requirements of the NRSWA
(Source: TRL Limited)



Planing of the carriageway for replacement of the surfacing being carried out under well-controlled traffic management
(Source: Nottingham City Council)



Reinstated footway completed to a high standard
(Source: London Borough of Bromley)



A kerb-line gas industry reinstatement which has been constructed to the surface requirements of the NRSWA
(Source: London Borough of Bromley)

ANNEX D

List of Publications

The publications referenced in this Best Practice Guidance document can be obtained as follows:

- (1) Highways Act 1980. London, HMSO, 1980.
(ISBN 0105466808)
- (2) New Roads and Street Works Act 1991. London, HMSO, 1991.
(ISBN 0105422916)
- (3) Department of Transport, Welsh Office, Scottish Office and Highways Authorities and Utilities Committee. Code of Practice for the co-ordination of street works and works for road purposes and related matters. London, HMSO, 1993. (ISBN 0115511628)
New edition due to publish Spring 2001, London, TSO. ISBN 0 11 552310 3
- (4) Voluntary code of practice for the co-ordination of street works in the City of London. (Section 5 of the New Roads and Street Works Act 1991). Issue 1. London, Corporation of London, Oct 1999.
(Write to Director of Technical Services, City of London, Box 270, Guildhall, London EC2P 2ES)
- (5) Making street works work: Voluntary Central London Partnership guidelines. London, Central London Partnership, June 2000.
(Available on the internet at www.c-london.co.uk/projects/pro_streetworks.asp or from CLP at 1, Hobhouse Court, Suffolk St, London SW1Y 4HH)
- (6) Considerate contractor street works scheme. Code of Practice. Birmingham City Council, 1999.
(Available from Transportation Department at BCC, Council House, Birmingham, B1 1BB or Tel 0121 303 7411)
- (7) Department of Transport et al. Traffic signs manual. Chapter 8: Traffic safety measures and signs for road works and temporary situations. London, HMSO, 1991.
(ISBN 0115509372)
- (8) Department of Transport et al. Safety at street works and road works: A Code of Practice. London, HMSO, 1992.
(ISBN 011551144X) *New edition due to publish Spring 2001*
- (9) Guidelines for the planning, installation and maintenance of utility services in proximity to trees (NJUG publication 10). London, National Joint Utilities Group, 1995.
(Available for £5, cheques payable to 'EASL' from NJUG Office, 30 Millbank, London SW1P 4RD.)
- (10) Roots and routes: Guidelines on highways works and trees. London, Department of the Environment, Transport and the Regions, 1999.
(Available on internet at www.wildlife-countryside.detr.gov.uk/consult/roots/03.htm)
- (11) Specification for the reinstatement of openings in highways. New Roads and Street Works Act 1991. A Code of Practice. London, HMSO, 1992.
(ISBN 0115511431)

- (12) Manual of contract documents for highway works. Volume 1: Specifications for highway works. London, Stationery Office, 1998.
(ISBN 0115519793)
- (13) Department of Transport, Welsh Office, Scottish Office and Highways Authorities and Utilities Committee. Code of Practice for Inspections. London, HMSO, 1992.
(ISBN 0115511482)
- (14) Avoiding danger from underground services. HSG 47. Sudbury, HSE Books, 2000.
(ISBN 0717617440)
(priced £7.50 from HSE Books, PO Box 1999, Sudbury, Suffolk, Tel 01787 881165)
- (15) Specification for addresses. BS 7666: Part 3. London, British Standards Institution, 1994.
(ISBN 0580231895)
(order from www.bs-global.com or contact BSI at Chiswick High Road, London W4 4AL, Tel 020 8996 7000)

Stationery Office (TSO (HMSO when before October 1996)) documents (refs 1-3,7,8,11,12,13). These can be ordered from www.ukstate.com, by telephone on 0870 600 5522, or from a Stationery Office bookshop eg London at 123 Kingsway London WC2B 6PQ, Tel 020 7242 6393 Fax 020 7242 6394, or any good bookshop.

It is helpful to give the ISBN when ordering.

