

Chapter 1 - Introduction

The National Cycling Strategy

Since the first publication of these Guidelines in February 1996, the landscape of transport policy has changed considerably with the launch on 10 July 1996 of the National Cycling Strategy. Endorsed by local government and many public and private institutions, this enormously valuable document from the Department of Transport moves policy forward in a number of directions. Some of its statements are reproduced here to serve as an introduction to this second issue of the Guidelines (our emphasis of key phrases).

*"Sustainable transport options are needed for **both utility and leisure trips**, offering practical alternatives to the private motorcar".*

*'Many of the actions to provide for cycling will involve a more cycle-friendly application of existing resources. For instance, cyclists can be taken more fully into account and **given priorities** within traffic management schemes. This process may well involve the **reallocation of road space** to create convenient and safe access by cycle. Other actions will involve **shifting resources** to schemes which recognise the value of cycling".*

*"Leisure cycling is a high quality way to enjoy the countryside and a good way to **introduce** people to cycling for their everyday transport needs".*

"On the whole, creating a cycle-friendly infrastructure does not demand either complex or expensive traffic management measures.

*Instead some significant changes in **thinking, attitudes and priorities** are needed in the way we manage our roads".*

*'Pedestrians will also benefit from the measures to enhance cycling. Attention needs to be directed towards **reducing the sources of danger**, rather than inhibiting the movement of environmentally sustainable yet vulnerable road-users".*

The action plan for a model local cycling strategy" contained in the document envisages that by the year 2002 the following should have been achieved:

- completion of **utility networks** in major towns including any construction
- safer routes to all secondary **schools**
- completion of urban sections and strategic inter-urban sections of the **National Cycle Network**

The National Cycling Strategy document compares the U.K.'s low level of cycling with some of our neighbours and notes that "In Switzerland there are more hills, Sweden has colder winters and Germany higher car ownership, yet each has five times the share of bicycle trips than in the UK". The cause of this can be found in our negligible provision to foster cycling with consequent poor records of safety compared with our continental counterparts. Accident rates for cyclists are 10 times lower in Denmark than in Britain; it is not surprising that cycle use is around 10 times

higher.

With fewer journeys made by cycle in the UK, correspondingly high profile efforts will be required to persuade the public that it is safe and attractive to cycle, that cycling is a sensible way to travel in the late 20th Century and a sustainable way of going into the next Millennium. This task is the primary function of the National Cycle Network.

The National Cycle Network

In September 1995 the 6,500 mile National Cycle Network became the first major project, and still the only truly nationwide project, to win the support of the Millennium Commission. Its Millennium Routes, some 2,500 miles, are to be completed in the year 2000, with a national celebration on Midsummer's Day. The remaining 4,000 miles should be open by 2005, although many sections are already ahead of schedule as local authorities look to implement their cycling policies. Indeed, the Network itself is being extended beyond that first put to the Millennium Commission.

The aims of the National Cycle Network are:

- (i) to provide a nationwide network of safe, attractive, high quality routes for cyclists which also extend the provision for walkers and wheelchair users;
- (ii) to promote cycling as a form of transport. The Network will be aimed at providing a standard appropriate to the needs of inexperienced or novice cyclists;
- (iii) to stimulate wider measures benefitting cyclists and pedestrians, and help to promote local and regional route networks.

The design standards outlined for the National Cycle Network call for the routes to be suitable for use by a novice adult cyclist, a family with young children or a sensible unaccompanied twelve-year-old. A mental picture of this constituency of likely users may help in the resolution of design issues.

A second, but equally crucial level of network is also under development - regional routes connecting to the National Cycle Network and acting as a framework for the fine-grained local networks which will eventually carry the bulk of regular journeys. It is desirable for regional routes to be built to the same standards as the National Cycle Network Routes.

The National Cycle Network Routes, in particular, must address the means of persuading those who currently do not cycle to start to do so. To this end they should be of a particularly high quality and be:

- safe, continuous and attractive to encourage novices to cycle
- useful for all manner of routine journeys for local people and existing cyclists
- so memorable for visitors and tourists that people starting with a recreational trip are persuaded to cycle more.

The Guidelines

These Guidelines have been developed with assistance from the Department of Transport, the Department of the Environment for Northern Ireland, The Scottish Office and the Welsh Office. During their preparation, principles and details have been agreed with the Department of Transport.

The Guidelines are for use by planners, engineers and designers, and by those with an advisory or consultative role in transport policy and infrastructure. They set out the design philosophy and criteria for the National Cycle Network but are equally suitable for cycling infrastructure of all sorts at a regional or a local level.

National or other cycle routes should not be created in isolation but within the integrated transport policy each authority will be developing. Route development should be one of a wide range of initiatives to reduce the impact of motor traffic and to improve the urban and rural environment for pedestrians, people with reduced mobility and public transport users. These policies will make use of, extend and enhance the National Cycle Network.

The Guidelines comprise a series of diagrams with notes giving advice on the planning and design of each part of the National Cycle Network.

It should be stressed that the Guidelines are not intended to cover every aspect of cycle provision. They should be used in conjunction with the following:

- Cycle-Friendly Infrastructure: Guidelines for Planning and Design prepared by the Institution of Highways and Transportation, the Department of Transport, the Bicycle Association and the Cyclists' Touring Club (1996);

Department of Transport Local Transport Notes, Traffic Advisory Leaflets and general technical advice;

Local authority standards, such as The London Cycle Network Design Guide.

The development of the Guidelines is a partnership process, like the National Cycle Network programme itself. Sustrans and Ove Arup & Partners warmly acknowledge the feedback on the first edition, which has been used to update this document.

Comments on the first edition came from numerous Local Authorities, the British Horse Society, British Waterways, Forest Enterprise, the Institution of Civil Engineers, the Joint Committee on Mobility of Blind and Partially Sighted People, the National Trust, the Royal Association for Disability & Rehabilitation, the Royal Society for the Prevention of Accidents, Scottish National Heritage, the Tandem Club, Transport 2000 and many others including individual cyclists and civil engineering practices.

Over one hundred different issues were raised, leading to substantial alterations being incorporated in this 1997 edition.

Contents

1	Introduction	
2	Structure and Use of the Guidelines	..17
3	Criteria for Route Planning	23
4	Links Within the Highway.	33
5	Junctions and Crossings	53
6	Traffic Calming, -	93
7	Rural Roads	107
8	Paths and Areas Free from Motor Traffic	127
9	Signing, Parking and Other Details	145
	Bibliography158
	Appendix I - Feedback Form163
	Appendix II ~ Crossing Site Assessment Record Sheet165
	Appendix III - DOT Cycle Signs Dimension Sheets.	
	Appendix IV - Sample Good Cycling Code173
	Appendix V - Possible Funding Sources for Cycling Infrastructure.174
	Appendix VI - NCN Design and Construction Checklist177
	Index180

**Guidelines and Practical
Details - issue 2**

list of Figures

Chapter 2 - Structure and Use of Guidelines

2.1	General Notes	
2.2	Key to figures	22

Chapter 3 - Criteria for Route Planning

3.1	A Typical Journey on the National Cycle Network	28
3.2	Route Planning in Urban Areas	31

Chapter 4 - Links Within the Highway

4.1	Link Specification Criteria	
4.2	Reallocation of Road Space to Cyclists	39
4.3	Mandatory With-Flow Cycle Lane and Bus Lane	41
4.4	Advisory Cycle Lane with Adjacent Parking/Loading	43
4.5	Contra-Flow Cycle Lane.	45
4.6	Contra-flow Cycle Lane with Adjacent Parking	47
4.7	Segregated and Unsegregated Cycle Track/Footway	49
4.8	Cycle Track Joining and Leaving Carriageway.	51

Chapter 5 - Junctions and Crossings

5.1	Assessment Framework for Selecting Crossing Type	57
5.2	Cycle Track Priority Crossing	59
5.3	Mandatory Cycle Lane: Continuation Across Minor Road	61
5.4	Cycle Track/Footway Crossed by Private Access	63
5.5	Cycle Track Priority Crossing "Bending Out" at Minor Road	65
5.6	Toucan Crossing	67
5.7	Cycle Track Give Way Crossing	69
5.8	Cycle Track Crossing with Refuge Island	71
5.9	Staggered Cycle Track Crossing of Major Road	73
5.10	Offset Crossing at Unsignalised Junction.	75
5.11	Staggered Cycle Track Crossing of Dual Carriageway	77
5.12	Minor Road Crossing Major Road at Signalised Junction	79
5.13	Staggered Minor Road Crossing Major Road at Signalised Junction	81
5.14	Two-Way Flow, 90° Turn at Signalised Junction	83
5.15	Cycle Bypass at Signalised Junction	85
5.16	Roundabout	87
5.17	Bridge	89
5.18	Underpass/Subway	91

Chapter 6 - Traffic Calming

6.1	Road Humps/Speed Cushions.....	99
6.2	Road Narrowings	101
6.3	Minor Road Closure	103
6.4	False One-Way Street.....	105

Chapter 7 - Rural Roads

7.1	Cycle Area Gateway	113
7.2	Features on Links	115
7.3	Major Road Crossings	117
7.4	Restricted Access Routes	119
7.5	Cycle Routes over Hills	121
7.6	Central Refuge Detail	123
7.7	Typical Rural Pinchpoint	125

Chapter 8 - Paths and Areas Free from Motor Traffic

8.1	Shared Cycle Tracks/Footpaths/Bridleways	133
8.2	Canal Paths	135
8.3	Canal Path Balustrades	137
8.4	Widths of Segregated Cycle/Pedestrian Facilities.....	139
8.5	Construction Materials and Thickness	141
8.6	Construction Details.....	143

Chapter 9 - Signing Parking and Other Details

9.1	National Route Direction Signs..	151
9.2	Tactile Marking for Segregated Facilities.....	153
9.3	Cycle Parking.....	155
9.4	Access Barriers.....	157

Chapter 2 - Structure and Use of the Guidelines

The Guidelines are for reference by those responsible for the planning and the detailed design of the National Cycle Network. They set out measures for tackling many of the situations likely to be encountered in developing the National Cycle Network. The measures are designed to be appropriate for novice cyclists.

The quality standard expressed in these solutions has been set in order that the National Cycle Network might attract more people to cycling. Compromising on these standards will reduce safety, attractiveness and comfort; it will therefore attract fewer people to cycling.

Chapter 3 contains Route Planning Criteria, which should be considered in assessing any proposed section of the National Cycle Network. These criteria provide a design framework to help meet the needs of the Network's target users. They should be used in conjunction with the subsequent chapters, which contain diagrams and drawings of measures likely to be encountered on the National Cycle Network project.

Chapter 4 illustrates the different types of cycle lanes and tracks within the highway boundary. Approximately half the National Cycle Network, including most of the more heavily trafficked urban sections, will be on-highway.

Chapter 5 covers a variety of junction and crossing types that will be encountered in developing the Network.

Chapter 6 deals with traffic calming, including many details applicable in the rural as well as the urban setting.

Chapter 7, covering rural roads and villages, has been considerably revised from Issue 1 of the Guidelines, due to increasing public concern about the pressure that motor traffic growth is placing on rural roads, which were formerly considered quiet and safe.

Chapter 8 gives design guidance for traffic-free paths.

In Chapter 9 can be found the signing arrangements for the National Cycle Network, as well as cycle parking and standard technical details.

The Appendices provide additional information and forms.

It is important that throughout the planning and design process the measures chosen make it clear that cycling is considered a valuable form of transport. In some cases, particularly urban areas, the opportunity should be taken to reinforce the local authority's policies by giving cyclists (and pedestrians) priority over drivers.

Throughout these areas it is unlikely that cycling measures will be considered in isolation from other policies and so it is anticipated that the introduction of a National Cycle Network route will be carried out in conjunction with wider traffic calming and speed control, or other traffic management measures.

The Department of Transport is encouraging local authorities to introduce demand management policies and measures. Reducing the volume of motor traffic will make cycling safer, easier and more appealing, and facilitate the development of high quality local cycling networks.

The designer should always seek to apply these technical drawings in such a way as to enhance the local environment and to improve the conditions for pedestrians, wheelchair users and the wider community. They are guidelines and should not be regarded as prescriptive; in all cases the achievement of a high quality local environmental improvement is a priority

Consultation with residents', cycling, pedestrian and disability access groups is always recommended when designing transport infrastructure and will be essential to ensure that attention is paid to the small details necessary for a successful route. It is to be hoped that the National Cycle Network will be a model project in this regard.

The figures in the following chapters should be read in conjunction with the general notes, which give information on the details appearing in the drawings.

General Notes - Figure 2.1

1. This document contains diagrams and notes on facing pages. The diagrams are illustrative of solutions to particular sets of conditions. The notes elaborate on the conditions and the solutions shown, and cross reference to Department of Transport and other relevant advice.
2. A continuous route will require solutions to the variety of conditions encountered along its length. This will be achieved by amalgamating solutions for intersections, crossings, links etc, as appropriate.
3. The details are illustrative and are to stimulate and guide designers to imaginative and practical solutions in order to create continuous routes. It is not possible to prescribe solutions to every set of circumstances: designers will have to use their professional judgement to arrive at optimum solutions.
4. The diagrams are not drawn to scale.
5. Generally, tactile markings for pedestrian/cyclist segregation and pedestrian crossing points have been omitted from the details for clarity. The DOT are currently reviewing the form of the raised white line delineator Diag No. 1049.1. Tactile markings are to be provided in accordance with current DOT guidance.
6. Traffic signs and white lining have been included in diagrams, to show particular requirements, but will not necessarily be comprehensive of all the signs and white lining required.
7. Traffic signs and white lining are to be provided and located as prescribed in the Traffic Sign Regulations Et General Directions 1994 (SI 1994 No. 1519) and the Traffic Signs Manual. It is expected that the direction signing for the National Cycle Network will be prescribed in the Amendment Regulations in Spring 1997; prior to then authorisation will be required. Hatched taper markings shown in the figures are indicative only; appropriate advice is contained in Chapter 5 of the Traffic Signs Manual.
8. The location of the signs in the figures is illustrative. Existing street furniture should be used whenever possible to locate signs, and care should be taken to avoid causing a hazard for, or inconvenience to, pedestrians or cyclists.
9. Sign clutter is unsightly and confusing. Designers should use signs sparingly and on a case by case basis. The use, for example, of sign Diag No. 963.1 "Cycle Track Look Both Ways" and its variants is not justified at every junction of a footway with a cycle track lane. It should be reserved for those situations where visibility is poor.
10. Most of the solutions detailed within this document will require some degree of public consultation; some will require Traffic Regulation Orders or special authorisation from the Department of Transport. The procedures for these steps are well documented and not referenced here.
11. See Figure 8.6 for details of visibility splays.
12. Examples are given to illustrate where all or some of the details in these diagrams have been used successfully in existing cycle facilities. The responsible local authority is indicated.
13. The "Cyclists Dismount" sign has not been used in these Guidelines. It is important that National Cycle Network routes are coherent and continuous with minimal deviation. The need for appropriate signing should be considered where conflicts may occur between pedestrians and cyclists.

14. Diag No. 1024 "Slow" has been shown on the approaches to some crossings. If the designer wishes to include this marking and the text height prescribed is unsuitable then the text height prescribed for Diag No. 1058 should be used. Half height "Slow" markings currently require authorisation from the DOT, but are expected to be prescribed in the Amendment Regulations.

15. In Wales, bilingual versions of traffic signs should be used.

16. Illuminated Keep Left/Keep Right bollards have not been included in the figures and therefore the designer must consider their use when providing central islands, refuges, splitter islands, build-outs etc.

17. Cycle lanes, cycle tracks, advance stop line reservoirs etc. need only be coloured where there is value in increasing their prominence. The approach should be in line with that adopted elsewhere in the local area. See Chapter 9.

18. Increased prominence of crossings or additional route guidance for cyclists may be necessary. Discussion with Sustrans and the DOT to determine an appropriate solution is encouraged. The application of "Elephant Footprints" (ref. WBM 294) may be suitable but their application requires special authorisation from the DOT. Elephant Footprints are unlikely to be authorised where vehicle speeds are expected to exceed 30mph, except where cyclists are under signal protection.

19. In order to give additional guidance to cyclists on a National Cycle Network route it will be appropriate to show route numbers on cycle information and **direction signs**. See Figure 9. 1.

20. It should be noted that unnecessary or poorly **designed build-outs can** cause problems for cyclists

on the carriageway. Where build-outs are provided as part of parking provisions the build-out should extend into the carriageway by only half the width of the parking bay unless it is intended to assist pedestrians crossing the road. Cyclists can then use the parking bays when not occupied without being forced into the traffic running lane at intervals.

2 1. Where build-outs and other features are constructed the designer must consider highway drainage requirements.

22. All forms of cycle track, cycle bypasses, gaps in refuges, cycle lanes with adjacent traffic islands etc. should be designed to be kept clear of accumulation of rubbish.

23. Definitions:

cycle track: a way for pedal cycles which can either be part of a highway adjacent to a carriageway or a separate highway in its own right, with or without a right of way on foot. For the purposes of this document only, this also includes a permissive cycle route.

cycle lane: a part of a carriageway allocated for use by cyclists.

footway: a pedestrian way within the boundaries of a highway, usually adjacent to a carriageway.

footpath: a separate way provided exclusively for pedestrians.

24. A number of legislative and DOT references in these Guidelines have equivalent versions published by The Scottish Office. These are listed in the Bibliography, and where the corresponding reference appears with a figure, it is annotated as (S).

Key to Figures – Figure 2.2



Cycle lanes, tracks and routes. (Used to highlight the cycle routes; coloured surface not implied)



Cycle lanes, tracks and other areas where contrast colour treatment is recommended. See Chapter 9



Verges/margins which will generally be soft areas



Central refuges, build-outs and margins which will generally be hard areas



Direction of travel for cyclists on the National Cycle Network



Direction of travel for motor vehicles



Cycle symbol marking Diag No. 1057. To indicate a cycle lane, track or route



Avenue trees (These are shown only in Chapter 4. They have been omitted from subsequent figures for clarity)

Chapter 3 - Route Planning Criteria

General

It is an aim of the National Cycle Network that there should be a consistent high quality of provision throughout. This does not mean that the design of cycling facilities should be uniform, as clearly the route along a forest track will be quite different from that along a town road or a canal path. However, it is important that there is a consistency of approach, so that, for example, a broadly similar approach is adopted for all forest tracks, both within individual sections and for sections in different parts of the country. The over-riding principle is to achieve high quality standards, to suit the needs of users, while aiming to improve the local environment.

Since the National Cycle Network is aimed at attracting people who do not currently cycle, they are not likely to ride as fast as the experienced urban cyclist. Route designs are not, therefore, based on a high cycling speed, although a higher standard should be adopted where the Network coincides with local commuter networks.

A lesser quality of provision than set out in this guide is unlikely to be successful and it is a basic aim that the National Cycle Network should set an example of excellence in its particular area. The quality of these routes should make clear the status of cycling as a form of transport favoured by the authorities, and in some cases more welcome than motor traffic.

Network criteria

The design criteria for a cycle route can be summarised by five qualitative evaluations:-

Safety

A route that minimises dangers for cyclists, pedestrians and other users, and gives a feeling of security

Coherence

A continuous route with a distinct and identifiable National Cycle Network character, integrated with local roads and cycle paths

Directness

A route that is as direct and quick as possible

Attractiveness

A route that complements and enhances its environment in such a way that cycling is attractive

Comfort

A route that enables a comfortable flow of cycle traffic and is easy to use.

These criteria were first set out in the Dutch guidelines "Sign Up For The Bike" by CROW. The CROW manual deals mainly with urban networks in a country where cycling is much more common. The criteria can be expanded and adapted for the National Cycle Network as follows:

Safety

Safety for cyclists is largely dependent on the flow and speed of motor traffic. At low flows and low speeds, cyclists and motorists can share road space with no significant danger. As flow or speed increases conditions become increasingly unpleasant and dangerous, requiring measures to restrain motorised traffic. The designer must judge whether traffic speed and/or flow can be satisfactorily reduced by remodelling links and junctions, or demand management measures, or whether cyclists might benefit from segregation.

The designer should bear in mind that the inexperienced cyclist or family group will benefit from segregation from motor traffic at lower speeds and volumes than the experienced cyclist. A preliminary route survey should therefore assess the safety of links and junctions and the scope for safety improvements. Route alignment is also crucial - for example, a cyclist will encounter less risk in turning right onto a major road and then left off it, rather than the other way around.

Equally important is the safety and convenience of other non-motorised travellers - walkers, wheelchair users and horse-riders, who may be able to benefit from the development of a particular part of the National Cycle Network. Careful discussion will help to fine-tune the proposals for maximum benefit to all.

Good design of segregated routes should also take into account the personal security of the user. with good sightlines, lighting where appropriate and the provision of a spacious and inviting environment where the traveller can

feel at ease. It should be remembered that popular and well-used routes generate their own informal surveillance which helps to give confidence to diffident users.

Coherence

The key characteristic of a successful route is its continuity of design, of standard, of signing and most particularly at crossings.

With the publication of the Cycle-Friendly Infrastructure Guidelines and National Cycling Strategy it is possible to give clearer guidance on cycle priority at road crossings. Hitherto almost every cycle route has been fragmented at these vital points such that the route itself has been compromised and its attractiveness to cyclists severely affected. Wherever possible the National Cycle Network route should have priority over secondary roads in order to make clear the authority's commitment to encourage cycling.

In order to maximise its usefulness, the National Cycle Network needs to link seamlessly to local cycle networks and other roads used by cyclists. Good links to public transport, particularly rail, are also very important, both for long-distance cycle carriage and for bike/train commuters.

Directness and convenience

Where the National Cycle Network route forms part of a regular journey to school or the town centre, it should aim to be **shorter and quicker** than the comparable route for motorists, in order to encourage the public to cycle. This may be achieved by a combination of short cuts for cyclists, junction improvements and cycle priority, **together with traffic calming and restraint measures**.

Key measures include:

- gaps in street closures
- contra-flow lanes
- cycle access into false one-way streets
- advance stop lines
- turns at junctions permitted only to cyclists
- routes through the pedestrianised core of the town.

For cyclists to achieve quick and convenient door to door journeys the routes must reach right to the entrances of schools, places of work, shops, tourist attractions etc. Good quality and highly visible cycle parking will be needed, located within or immediately outside such destinations; at railway stations etc. there may be a requirement for secure long-term cycle parking.

Where a section of the network is more generally used for leisure and recreation, the attractiveness of the route and its qualities of freedom from traffic and avoidance of unpleasantly steep hills may be more important criteria than directness.

Unduly circuitous routes should be avoided however, especially where the route could be considerably shortened by implementing a crucial new feature or measure.

Attractiveness

A National Cycle Network route has the function of convincing the public that cycling is a pleasurable experience, as well as a safe, convenient, attractive and healthy one! To this end it should pass interesting places, including major tourist attractions, and its route should give a variety of views and experiences.

In some cases landscaping measures will be appropriate. In urban areas streets are much enhanced by avenue tree planting and it would suit the quality and status of the National Cycle Network route if it were to be marked in this way.

Off-road routes in urban areas may be lit, but consideration should also be given to the way in which traffic-free paths can act as wildlife corridors and fingers of countryside running right into the town.

In rural areas thought needs to be given to routes offering winter and summer options - the latter being off-road routes, for example across the Marlborough Downs, which are perfectly serviceable in summer and perhaps more interesting from the tourist point of view than the minor road alternative. The latter can be used in wet weather when they are impassable.

Cycling is a social activity and where possible, provision should be made for cyclists to travel

two abreast. However, in recognition of the constraints of the UK built environment this may not always be possible in urban areas.

Comfort

Paths for pedestrians and cyclists should be built of materials which remain hard and serviceable throughout the year. They should be laid to a camber or cross-fall to give proper drainage and a smooth riding surface.

Junctions should be convenient and easy to understand, and the cyclists passage across major roads simplified. Long uphill sections should be free from motor traffic wherever possible, and routes adjacent to main roads, with their fumes and noise, should be minimised.

Monitoring

As with any major infrastructure project, use of the National Cycle Network needs to be monitored. Wherever possible, regular counts and interviews should be carried out. The resulting information can be used to make modifications, to justify additional works and to assist in determining the wider benefits of the National Cycle Network such as promoting low impact tourism.

Examples of Journeys

These criteria need to be borne in mind when designing each part of any route, as well as its whole. Typical routes might consist of many components, as illustrated by the typical urban and rural journeys, and the urban route planning diagram shown on the following pages.

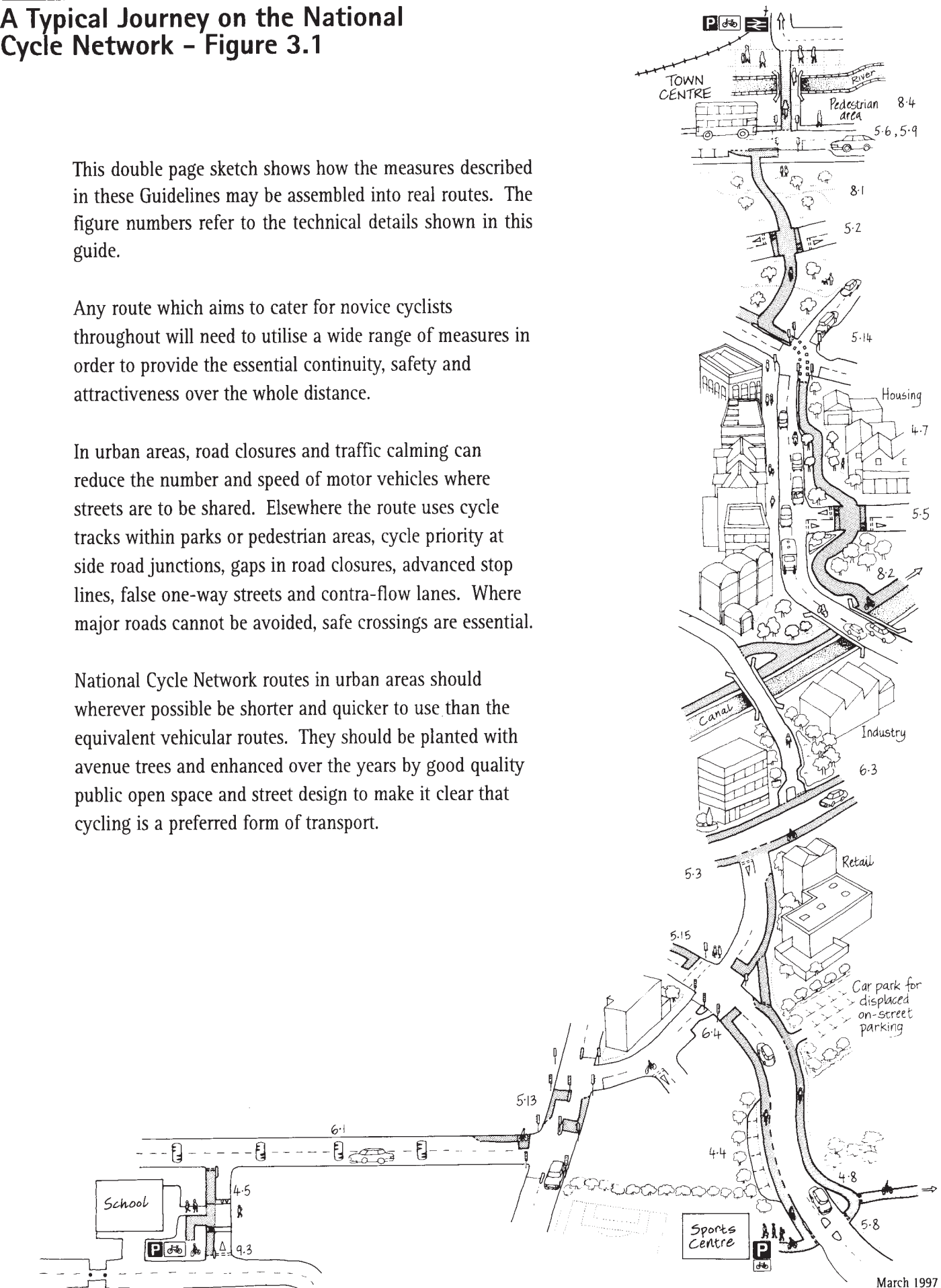
A Typical Journey on the National Cycle Network – Figure 3.1

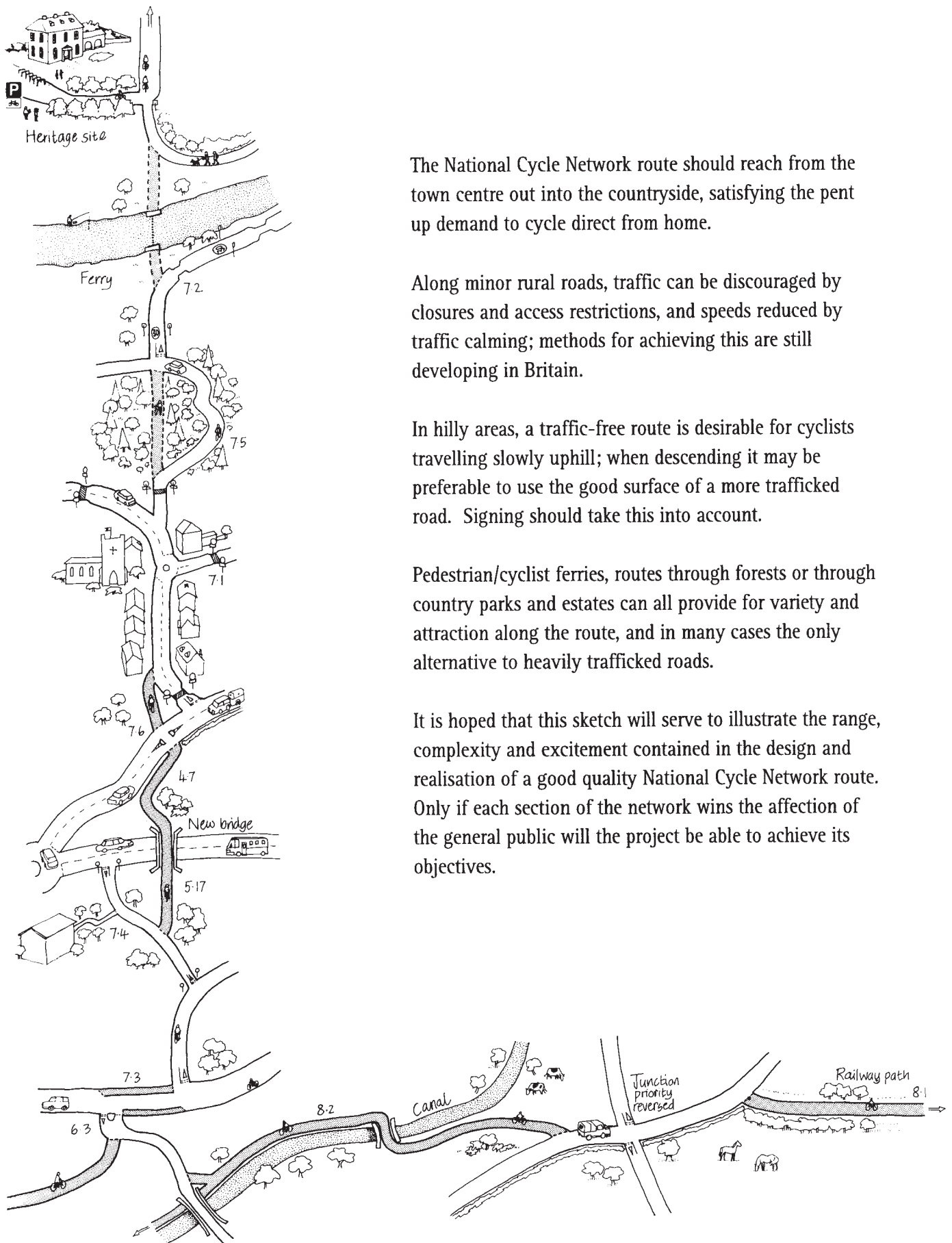
This double page sketch shows how the measures described in these Guidelines may be assembled into real routes. The figure numbers refer to the technical details shown in this guide.

Any route which aims to cater for novice cyclists throughout will need to utilise a wide range of measures in order to provide the essential continuity, safety and attractiveness over the whole distance.

In urban areas, road closures and traffic calming can reduce the number and speed of motor vehicles where streets are to be shared. Elsewhere the route uses cycle tracks within parks or pedestrian areas, cycle priority at side road junctions, gaps in road closures, advanced stop lines, false one-way streets and contra-flow lanes. Where major roads cannot be avoided, safe crossings are essential.

National Cycle Network routes in urban areas should wherever possible be shorter and quicker to use than the equivalent vehicular routes. They should be planted with avenue trees and enhanced over the years by good quality public open space and street design to make it clear that cycling is a preferred form of transport.





The National Cycle Network route should reach from the town centre out into the countryside, satisfying the pent up demand to cycle direct from home.

Along minor rural roads, traffic can be discouraged by closures and access restrictions, and speeds reduced by traffic calming; methods for achieving this are still developing in Britain.

In hilly areas, a traffic-free route is desirable for cyclists travelling slowly uphill; when descending it may be preferable to use the good surface of a more trafficked road. Signing should take this into account.

Pedestrian/cyclist ferries, routes through forests or through country parks and estates can all provide for variety and attraction along the route, and in many cases the only alternative to heavily trafficked roads.

It is hoped that this sketch will serve to illustrate the range, complexity and excitement contained in the design and realisation of a good quality National Cycle Network route. Only if each section of the network wins the affection of the general public will the project be able to achieve its objectives.

Route Planning in Urban Areas - Figure 3.2

Notes

1. It is generally acceptable to permit cyclists in vehicle restricted areas. See also Chapter 8.
2. The introduction of cycling within a pedestrianised area should be accompanied by an information/ education process to encourage considerate behaviour by cyclists, possibly with appropriate signing where conflicts may occur between pedestrians and cyclists.
3. Access to pedestrianised areas for cyclists may need to be restricted at certain periods of the day due to the high level of pedestrian activity. This will normally only need to be limited to peak retail periods, such as 11:00 to 15:00.
4. In areas of dense pedestrian activity and where bus lanes do not exist, segregated cycle tracks should be considered.
5. If there is 24 hour cycle access it is recommended that cycle parking be provided at the heart of the local area. Parking on the periphery may be more appropriate if there are time restrictions. Additional parking at points of interest or community facilities should be provided.
6. Routes for cyclists within urban areas should aim to be at least as direct as those for motor vehicles.
7. It is important that visitors to local areas are informed of facilities such as toilets, libraries and information centres, by locating maps at key points, such as next to cycle parking.

References

1. Local Transport Note 1189 Making Way for Cyclists (S)
2. Local Transport Note 1187 Getting the Right Balance
3. Traffic Advisory Leaflet 9193 Cycling in Pedestrian Areas

Examples

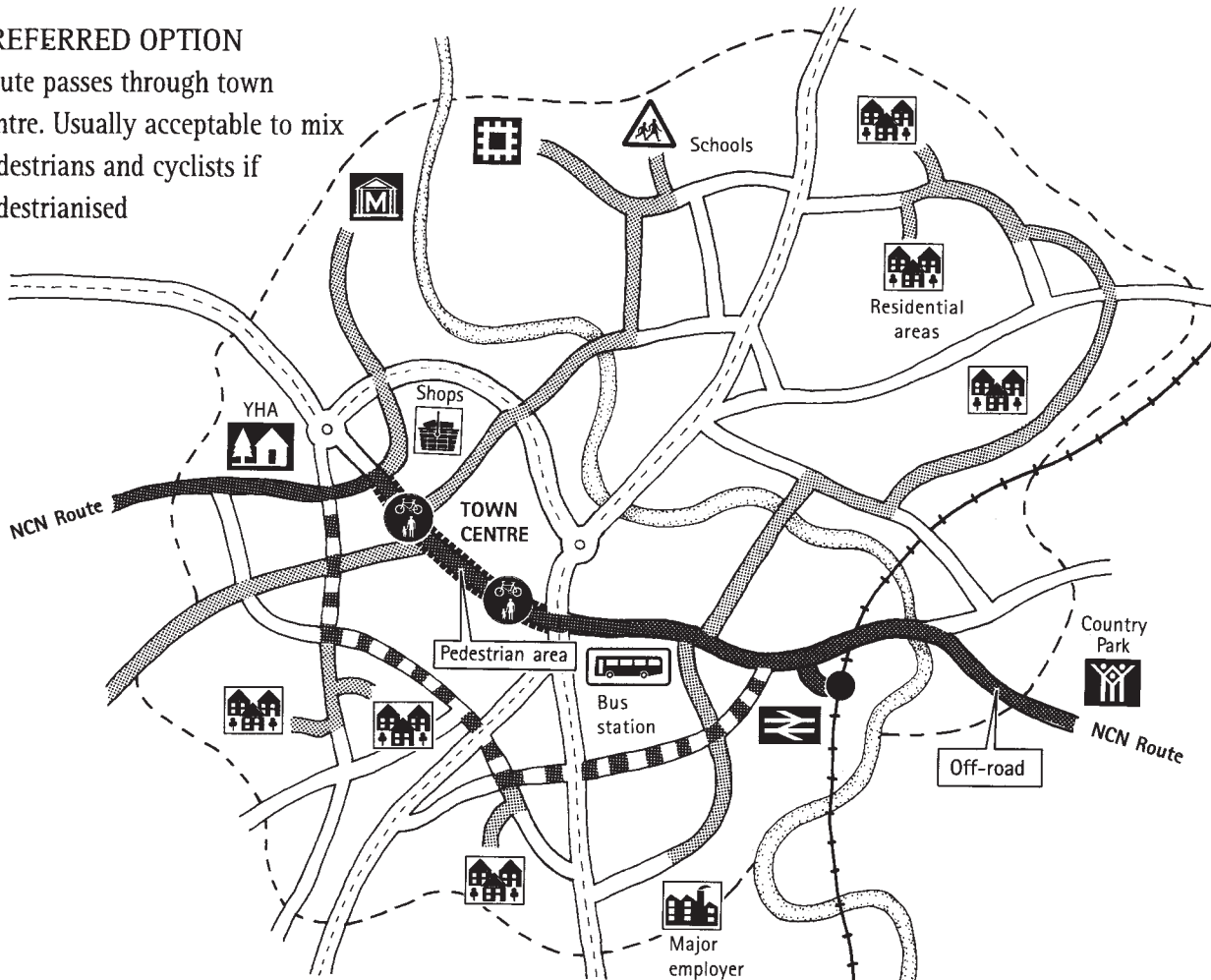
1. YORK: Pedestrian area in heart of the old city. This area is open to the cyclist during evening and morning peak commuting hours: before 11am and after 4pm Monday to Friday. The ban on cycling in the peak shopping period is well respected, not least since the volume of pedestrians makes progress by bicycle very slow. (York City Council)
2. BIRMINGHAM: Cycling is permitted on pedestrian streets, without special facilities, in particular New Street and High Street. Also cyclists may use Victoria Square and Chamberlain Square. (Birmingham City Council)
3. BRISTOL: East Street
(Avon County Council)
4. CHICHESTER: West Street, South Street, Crane Street,
North Street, East Street
(West Sussex County Council)
5. MANCHESTER: West Nesley Street
(Manchester City Council)
6. PETERBOROUGH: Bridge Street, Long Causeway
(Cambridgeshire County Council)

Route Planning in Urban Areas – Figure 3.2

The National Cycle Network route should link to the commuter network, tourist attractions, civic amenities, transport interchanges, schools and other main attractors. Cycle parking should be provided at all these locations.

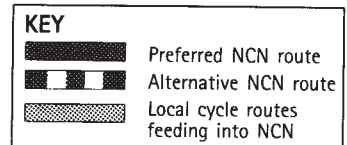
PREFERRED OPTION

Route passes through town centre. Usually acceptable to mix pedestrians and cyclists if pedestrianised



ALTERNATIVE OPTION

Where the direct route through the centre is not feasible, then a close parallel route with feeders to the town centre may be appropriate



Chapter 4 - Links Within the Highway

Suitability of Routes

Most cycling takes place on existing urban roads; this will also be the case with the National Cycle Network. As well as following lightly trafficked roads which require few or no measures, a National Cycle Network route should be an opportunity to introduce traffic calming, special cycling measures and visual enhancements, which will encourage local cycling.

The choice of routes in urban areas is largely determined by the extent to which junction features can be resolved where the cycle route meets or crosses more heavily trafficked roads. Main roads themselves may be the only direct route into a town centre, and here measures are likely to be needed to adequately reduce conflict with or intimidation by other traffic, through traffic calming or separation of cyclists from motor vehicles.

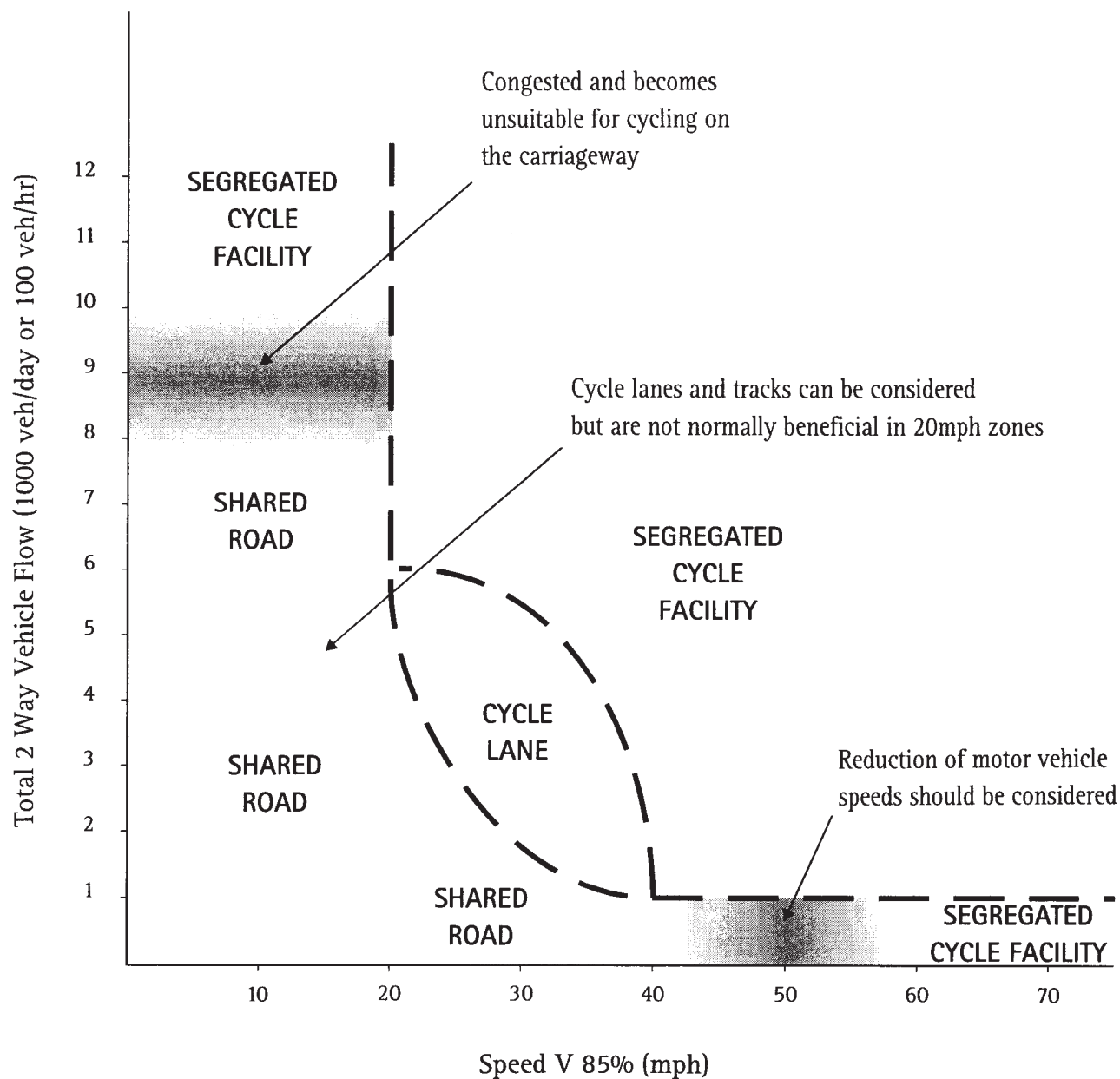
In order to assess the suitability of any road for a National Cycle Network route it is important to quantify vehicle speeds and flows. These criteria indicate whether the conditions need to be modified for cyclists to share the road with motor vehicles, or whether a segregated route should be established. Traffic conditions should be examined in both peak and off-peak periods. The designer should recognise that options are available to divert motor traffic, introduce traffic calming measures and to alter road markings and kerb lines to redistribute road and footway space. Reducing vehicle speeds and volumes are important elements in providing for cyclists.

This relationship is shown on Figure 4.1 which is an adaptation of a graph given in the CROW document "Sign Up for the Bike". The CROW criteria have been modified to reflect the needs of the inexperienced cyclist or family group who will benefit from segregation earlier than the experienced cyclist. Figure 4.1 sets out the motor vehicle speed and flow criteria which are relevant in determining the most appropriate cycling facility in both urban and rural situations. In practice this will be the first step in the assessment of the need for segregation and will be complemented by a broader assessment of local factors.

Parking and Loading

An important factor in assessing the suitability of a road for cyclists is the use of the kerb space. Parking and loading take up road space and the opening of vehicle doors creates a hazard for cyclists. Where circumstances permit, it may be appropriate to restrict kerbside parking along a cycle route, displacing the vehicles to adjacent roads or off-street parking. Loading may also be relocated to more suitable areas. Such controls may operate throughout the day, or cover those time periods when cyclists are most at risk. Where restrictions are not feasible, consideration should be given to how the kerbside activity could be better managed to reduce the hazard to cyclists. For example, where the turnover of parked cars is high, a dividing strip may be required.

Link Specification Criteria – Figure 4.1



If the 85% speeds are above the speed limit, consideration should be given to speed reduction measures

Reallocation of Road Space

A fundamental aspect of the provision of cycling facilities is the reallocation of road space from motor vehicles to cycling. This can be seen in the majority of figures within this document. The provision of **cycle tracks in urban areas at the expense of the** footway is not encouraged, particularly where there are high pedestrian flows, but it is acknowledged that there are situations where this may be necessary. If a segregated facility is being provided then the cyclist should usually be placed nearest to the motor traffic and a dividing strip provided between the cycle track and the carriageway.

Reallocation of road space not only promotes cycling but can act as a restraint on motor traffic which is now an important aspect of transport and planning policy.

Reallocation of Road Space to Cyclists - Figure 4.2

Notes

Removal of car parking

1. These examples are given to emphasise the importance of reallocating road space from motor vehicles to cyclists. More detailed consideration of the features shown in this figure is provided elsewhere.
2. The provision of cycle lanes is achieved by removing parking from one side of the carriageway and reducing the all purpose carriageway width from 7.0m to 6.0m.
3. Reducing lane widths can help to reduce traffic speed. A width of 6.0m will be capable of carrying HGVs, buses and a vehicle flow of up to 10,000 vpd.

Dual Carriageway

4. A cycle track or cycle track/footway can be created by reducing a dual carriageway to a single carriageway. Planting avenue trees will enhance the facility.

Advanced Stop Lines

5. This facility has advantages for cyclists without necessarily reducing junction capacity. Reducing the number of cyclists in the general traffic stream will enable the saturation flow of the nearside lane to be maintained with a narrower width. In some instances lane widths of 2.5m can be acceptable. Reducing the traffic flow will be an important aspect for some National Cycle Network routes. See Figures 5.12, 5.13 and 5.15.

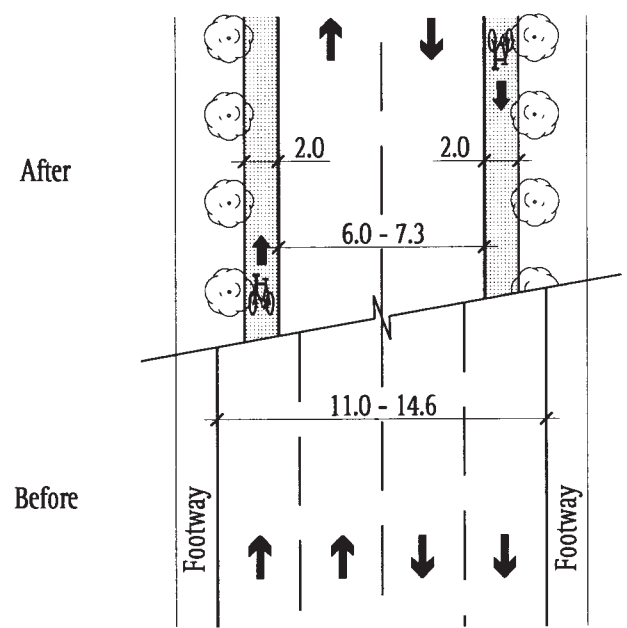
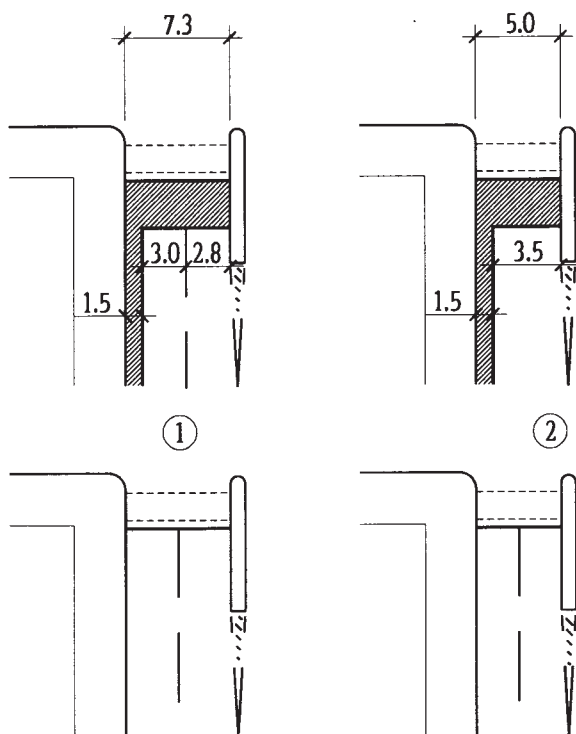
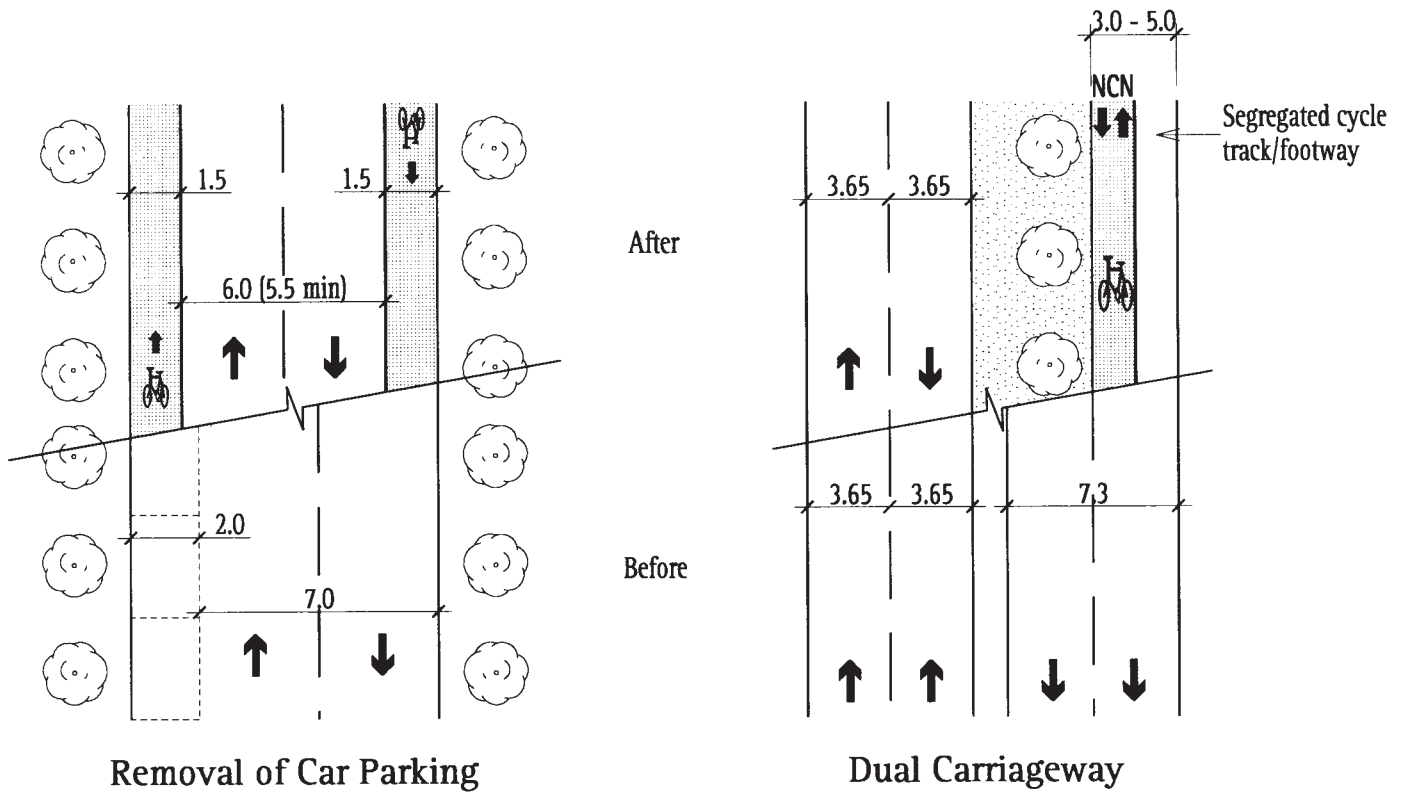
Multi-Lane Highways

6. Where possible the provision of cycle facilities at the expense of motor traffic should also be accompanied by an enhancement of pedestrian facilities and environmental improvements.

Examples

1. BRISTOL: College Green
(Avon County Council)
2. HAMMERSMITH: King Street (London Borough of Hammersmith and Fulham)
3. DERBY: Exeter Bridge
(Derbyshire County Council)

Reallocation of Road Space to Cyclists – Figure 4.2



Mandatory With-Flow Cycle lane and Bus lane - Figure 4.3

Notes

1. Where feasible mandatory cycle lanes are preferable to advisory cycle lanes for the National Cycle Network.
- to
2. If stopping and loading cannot be prohibited over the length of a mandatory cycle lane then a time-limited mandatory lane or an advisory cycle lane may be considered. Advisory cycle lanes may be appropriate on roads too narrow to permit mandatory lanes.
3. Where mandatory cycle lanes of 1.5m would result in unacceptably narrow lane widths for other traffic, consideration should be given to using an advisory cycle lane, accepting that on occasions there may be some encroachment from motor vehicles.
4. The use of busy bus lanes as a part of the National Cycle Network is not ideal for young or novice cyclists. It is National Cycle Network policy to avoid major urban roads whenever possible.

5. 24-hour bus lanes are preferred, but 12-hour bus lanes are acceptable.

6. The bus lane width shown is the desirable standard. This width will permit cyclists to pass stationary buses. Where bus stops are not within the bus lane, or where bus flows are low, the width of the lane may be reduced to 3.0m for short lengths.

References

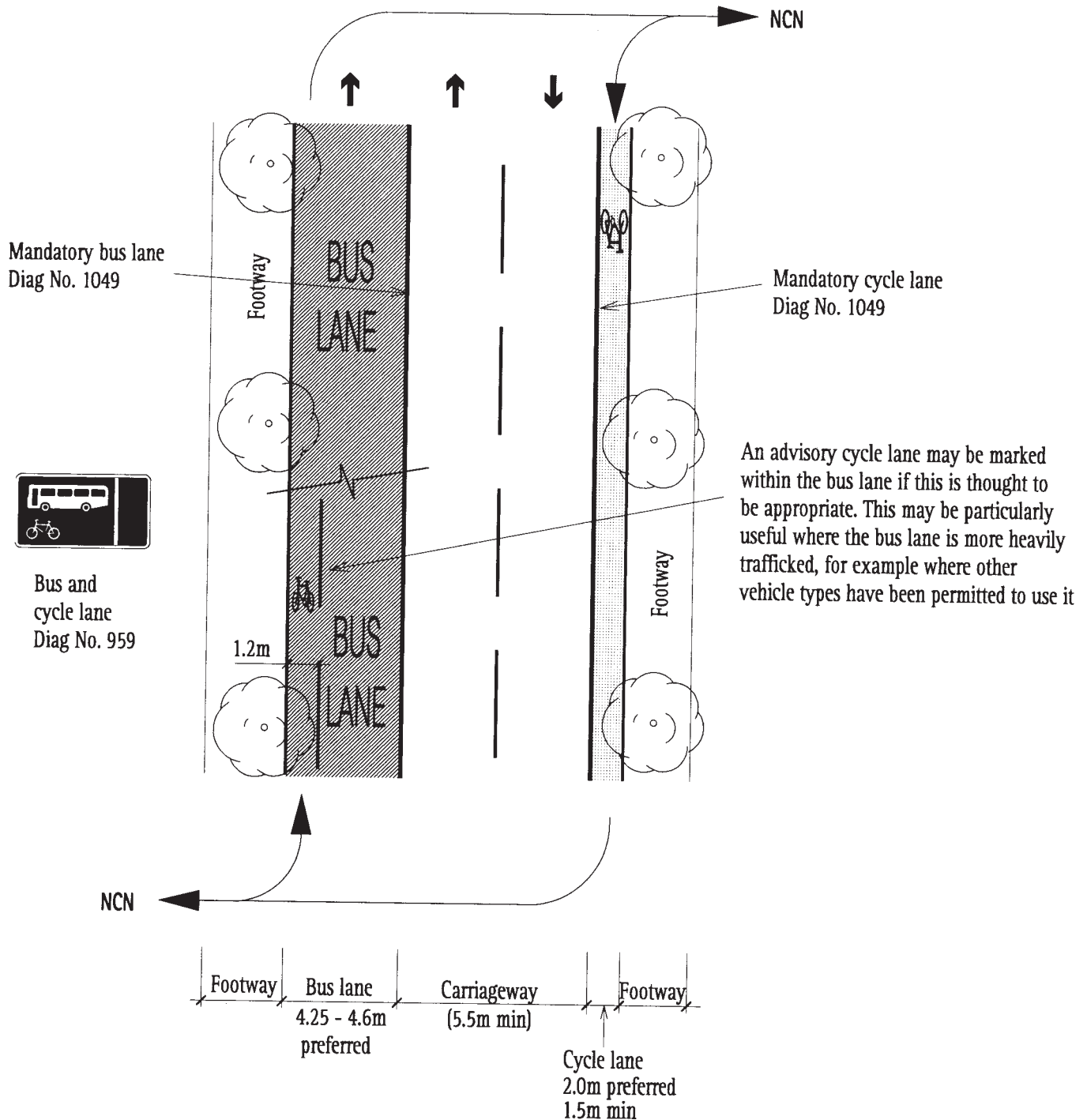
1. Local Transport Note 1189
Making Way for Cyclists (S)
2. Local Transport Note 1191
Keep Buses Moving. Guide to Traffic Management

Assist Buses in Urban Areas

Examples

1. There are numerous examples of mandatory and advisory cycle lanes across the country
2. There are numerous examples of bus lanes which cycles can use
3. BRIGHTON: Advisory cycle lane in Bus Street (East Sussex County Council)
4. OXFORD: St Giles - Mandatory cycle lane (Oxford City Council)
5. NOTTINGHAM: Mansfield Road - Bus lane plus cycles (Nottinghamshire County Council)

Mandatory With-Flow Cycle Lane and Bus Lane – Figure 4.3



Advisory Cycle Lane with Adjacent Parking/Loading - Figure 4.4

Notes

1. The use of mandatory cycle lanes is preferred. However, where kerbside parking is retained, an advisory cycle lane is necessary to allow access for the parking.
2. A dividing strip is necessary between the parked vehicles and the cycle lane to protect cyclists from opening doors. This is most critical when there is a high turnover of parking.
3. The dividing strip should be clearly visible. This can be achieved by defining both sides of the cycle lane and colouring its surface. Otherwise the dividing strip may be in a contrasting material or hatched.

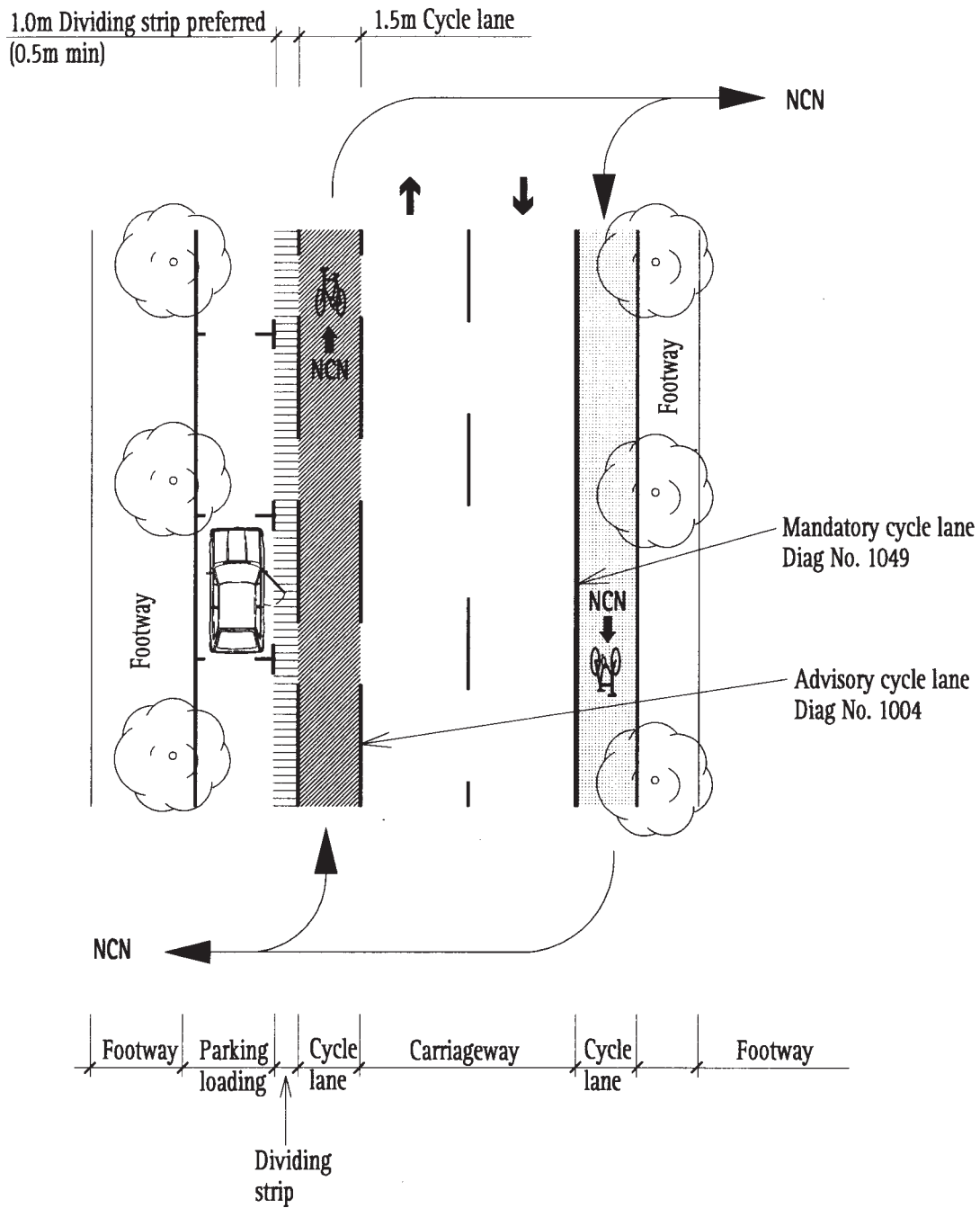
References

1. Local Transport Note 1189 Making Way for Cyclists (S)

Examples

1. OXFORD: Cowley Road
(Oxfordshire County Council)
2. EXETER: Burnthouse Lane
(Devon County Council)
3. NOTTINGHAM: Beechdale Road
(Nottinghamshire County Council)
4. BRISTOL: Winterstoke Road
(Avon County Council)
5. OXFORD: London Road
(Oxfordshire County Council)

Advisory Cycle Lane with Adjacent Parking/Loading – Figure 4.4



Contra-Flow Cycle Lane - Figure 4.5

Notes

1. Where motor vehicle speeds and volumes are sufficiently low, the preferred method of allowing cyclists to travel "contra-flow" is by creating a "false" one-way street or by a Traffic Regulation Order. This arrangement can avoid the need for parking restrictions or cycle lanes and is common in other bicycle- friendly European countries. See Figure 6.4 for details.
2. The preferred width of a one-way cycle lane is 2.0m, minimum width 1.5m. Two-way cycle lanes should preferably be 3.0m wide and should be physically segregated from motor vehicles.
3. A mandatory contra-flow cycle lane requires a Traffic Regulation Order to prohibit motor vehicles entering the lane and to prohibit waiting and loading in the cycle lane.
4. Where the carriageway width permits, it is advantageous to provide a raised kerb strip (continuous or broken) separating motor vehicles from cycles.
5. The provision of the right-turning cycle lane can be considered where vehicle speeds are below 40mph and vehicle flows are below 6000vpd. Where these criteria are not met then a 'Jug handle' with a central island as illustrated in Figure 6.4 may be appropriate.
6. Where occasional encroachment into the contra-flow lane may be unavoidable, e.g. to permit access by large vehicles to frontages, a stretch of advisory contra-flow cycle lane may be the best solution. See Figure 4.6.

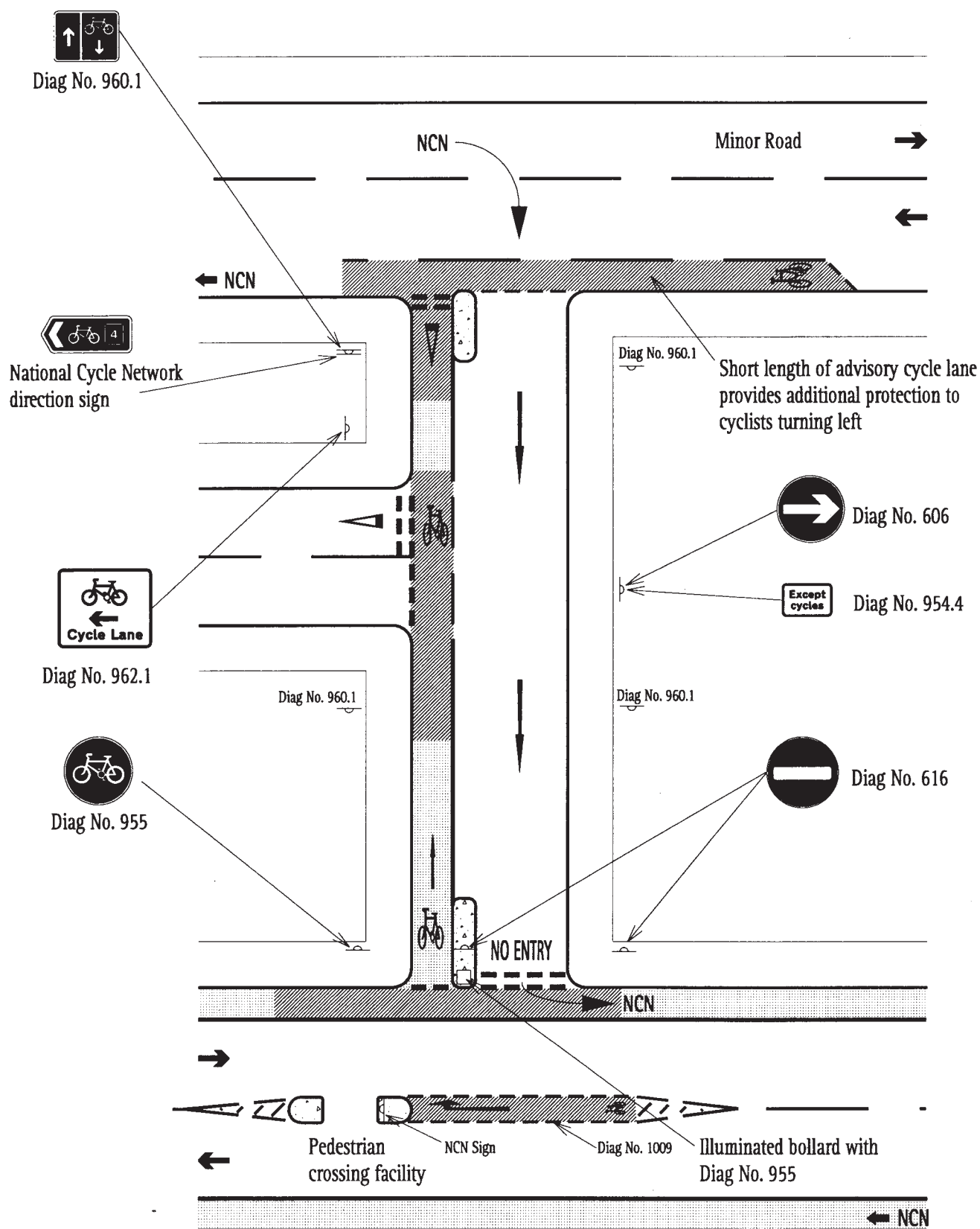
References

1. Local Transport Note 1189
Making Way for Cyclists (S)

Examples

1. MANCHESTER: Cooper Street
(Manchester City Council)
2. MIDDLESBROUGH: Southwell Road/Eastbourne Road
(Cleveland County Council)
3. PETERBOROUGH: Geneve Street
(Cambridgeshire County Council)
4. CAMBRIDGE: Downing Street
(Cambridgeshire County Council)
5. NOTTINGHAM: Middle Street, Beeston
(Nottinghamshire County Council)

Contra-Flow Cycle Lane – Figure 4.5



Contra-Flow Cycle Lane with Adjacent Parking - Figure 4.6

Notes

1. The preferred width of a one-way cycle lane is 2.0m, minimum width 1.5m. A two-way cycle lane should preferably be 3.0m wide and should be physically segregated from motor vehicles.
2. Where mandatory cycle lanes are below the minimum width of 1.5m, consideration should be given to using an advisory cycle lane of a more suitable width, accepting that on occasions there may be some encroachment from motor vehicles.
3. The dividing strip should be clearly visible. This can be achieved by defining both sides of the cycle lane and colouring its surface. Otherwise the dividing strip may be in a contrasting material or hatched.
4. A contra-flow advisory cycle lane does not require a Traffic Regulation Order. However, it will be necessary for the "one way" traffic order to contain an exemption for cyclists.

References

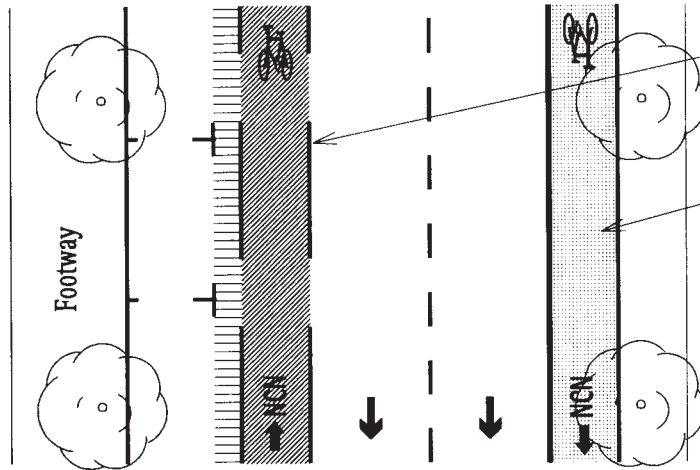
1. Local Transport Note 1189
Making Way for Cyclists (S)
2. Traffic Advisory Leaflet 5189
Innovatory Cycle Scheme, London, King Street
Hammersmith Contra-Flow Cycle Lane

Examples

1. LONDON: Crisp Road and King Street
Contra-flow with segregation island
(London Borough of Hammersmith Et Fulham)
2. BRISTOL: Arley Hill and Neatham Road
Contra-flow with adjacent parking
(Avon County Council)

Contra-Flow Cycle Lane with Adjacent Parking – Figure 4.6

1.0m Dividing strip preferred
(0.5m min) 1.5m Cycle lane



Contra-Flow Lane Markings

Advisory lane marking
Diag No 1004

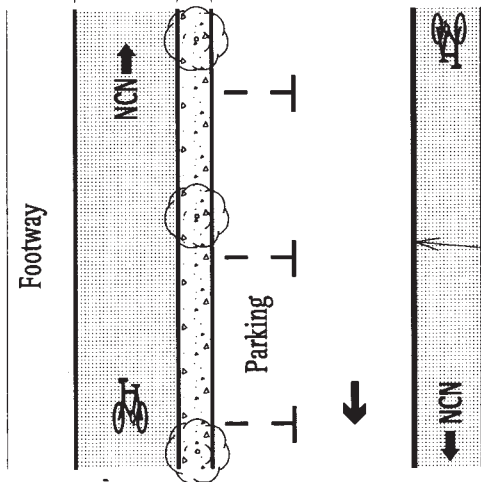
With-flow cycle movements could use advisory or mandatory cycle lane if appropriate



Contra-flow cycles

The above sign is recommended to be used in conjunction with advisory contra-flow lanes. The use of this sign will require special authorisation from the DOT

2.0m preferred width 1.0m Segregation island
0.5m min



Cycle Lane with Segregation Island

NOTE: Strategic gaps or channels through island can alleviate drainage problems. The segregation island could be used for mounting parking meters.

Mandatory with-flow cycle lane

Segregated and Unsegregated Cycle Track/Footway - Figure 4.7

Notes

1. The provision of cycle facilities in urban areas at the expense of pedestrian facilities is not encouraged where there are high pedestrian flows. It is preferable to leave footways intact and take space from the carriageway to provide for the cyclist. Every proposal to convert footways to shared use must be considered on its local merits as footways and their use are so varied.
2. See Figure 5.4 for details of cycle routes crossed by private accesses.
3. The margin shown in the detail is provided where space permits as a physical comfort barrier between motor vehicles and cyclists/pedestrians. The planting of trees is encouraged to provide a visual shield. Street furniture or trees within the margin will entail increasing the width to a minimum of 1.0m in order to provide the necessary clearances to motor vehicles and cyclists. Street furniture within the cycle track/footway should be removed or relocated.
4. The most common method of tactile segregation is by using a raised white line delineator Diag No. 1049.1 combined with tactile paving. The use of a 50mm change of level may be appropriate in certain locations on the National Cycle Network to suit local conditions or where it is considered that this omission will be particularly detrimental to partially sighted people.
5. On an unsegregated cycle track/footway a 3.0m width is preferable, although 2.0m width has been successful for flows of 100-200 pedestrians/cyclists per hour. A 2.0m width facility should normally be unbounded along both sides. More detailed information on widths for segregated facilities is **given in Figure 8.4**.

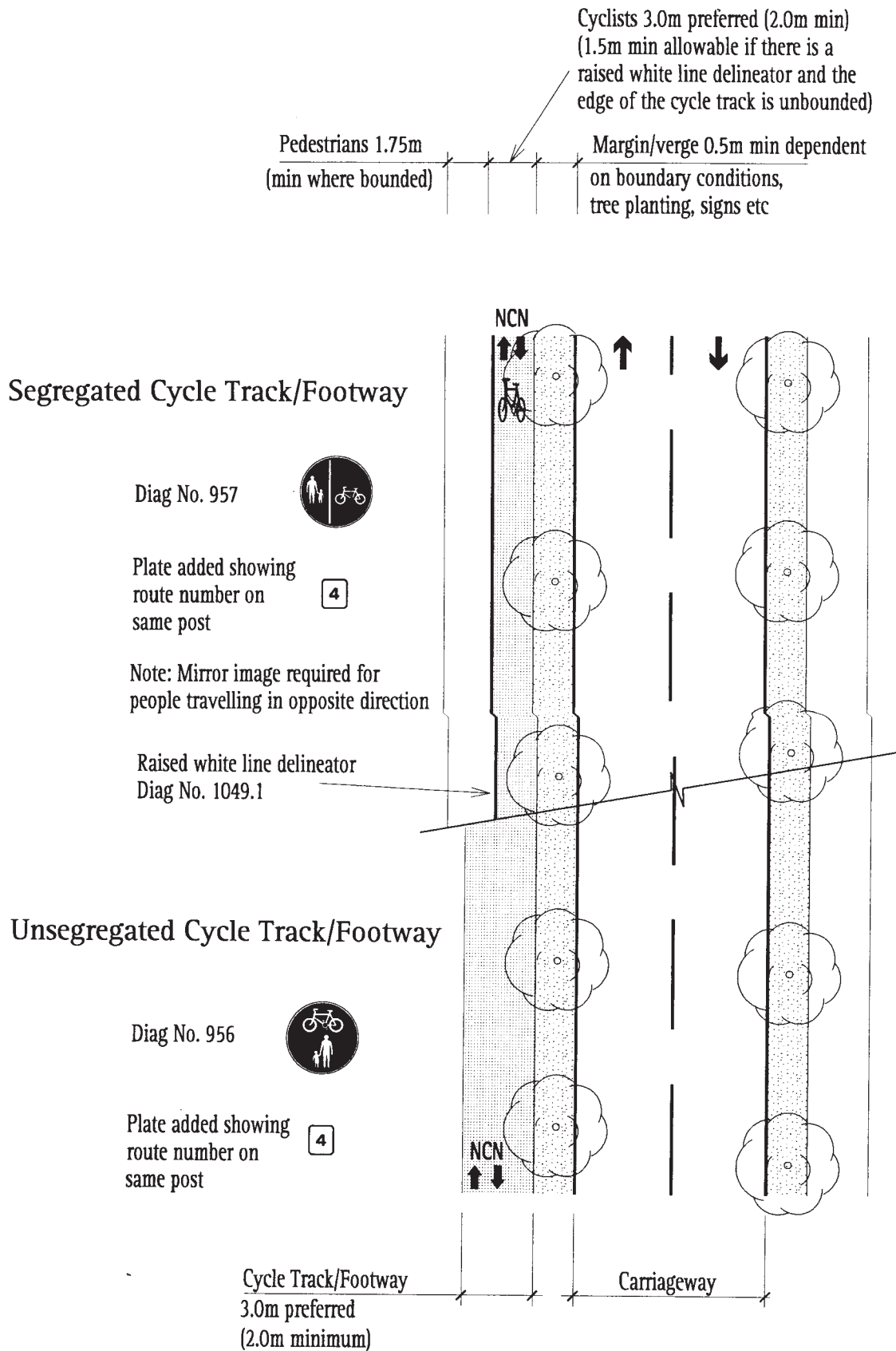
References

1. Local Transport Note 2186
Shared Use by Cyclists and Pedestrians (S)
2. Traffic Advisory Leaflet 4190
Tactile Markings for Segregated Shared Use by
Cyclists and Pedestrians
3. Disability Unit Circular 1191
The Use of Dropped Kerbs and Tactile Surfaces at
Pedestrian Crossing Points
4. Disability Unit Draft Guidance Note
Guidance on the Use of Tactile Paving Surfaces

Examples

1. MANCHESTER: Wythenshaw/Simons Way Cycle
Route
(Manchester City Council)
2. SHEFFIELD: Devonshire Green Cycle Track
(Sheffield City Council)
3. LONDON: Hyde Park
(Westminster City Council)
4. NOTTINGHAM: Queens Walk, The Meadows (Nottinghamshire County Council) MILTON KEYNES: Redways
(Buckinghamshire County Council) SOUTHAMPTON: Totton Bypass (Hampshire County Council)
7. NOTTINGHAM: Hucknall Bypass A611
(Nottinghamshire County Council)

Segregated and Unsegregated Cycle Track/Footway – Figure 4.7



Cycle Track Joining and Leaving Carriageway - Figure 4.8

Notes

1. The design should allow cyclists to join or leave the carriageway safely and conveniently, without interruption. Particular attention should be paid to kerb ramp and radius details.
2. The most common method of tactile segregation of cycle track/footway is by using a raised white line delineator Diag No. 1049.1 combined with tactile paving. The use of a 50mm change of level may be appropriate in certain locations on the National Cycle Network to suit local conditions or where it is considered that this omission will be particularly detrimental to partially sighted people.
3. The margin/verge separation shown in the detail is provided where space permits as a physical comfort barrier between motor vehicles and cyclists/pedestrians. Street furniture erected within it will entrance to necessitate a minimum margin width of 1.0m in order to provide the necessary clearances to vehicles.
4. Diag No. 1024 "Slow" has been shown on approaches to the crossing. If the designer wishes to include this marking and the text height prescribed is unsuitable then the text height prescribed for Diag No. 1058 should be used. The use of half height "Slow" markings will require special authorisation from the DOT.

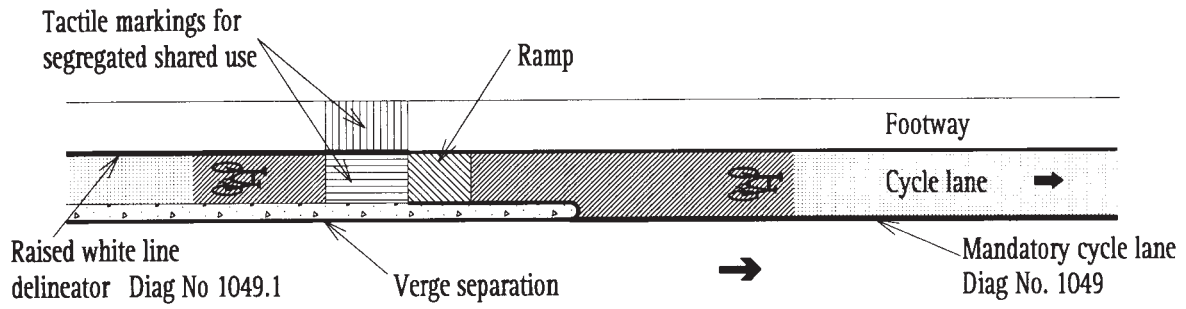
References

1. Local Transport Note 1189
Making Way for Cyclists (S)
2. Traffic Advisory Leaflet 4190
Tactile Markings for Segregated Shared Use by Cyclists and Pedestrians

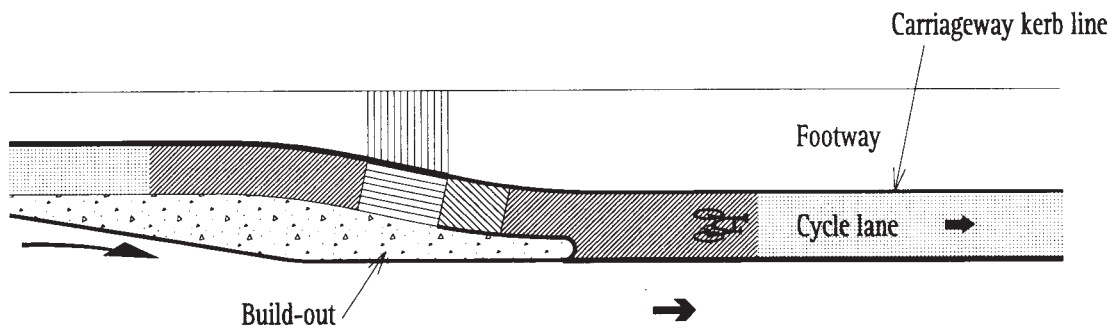
Examples

1. CAMBRIDGE: Barton Road
(Cambridgeshire County Council)
2. YORK: Water End
(York City Council)
3. MANCHESTER: Oxford Road Cycle Route
(Manchester City Council)
4. OXFORD: Belbroughton Road/Banbury Road
(Oxfordshire County Council)
5. NOTTINGHAM: Beeston Lane, West
University (Nottinghamshire County Council)

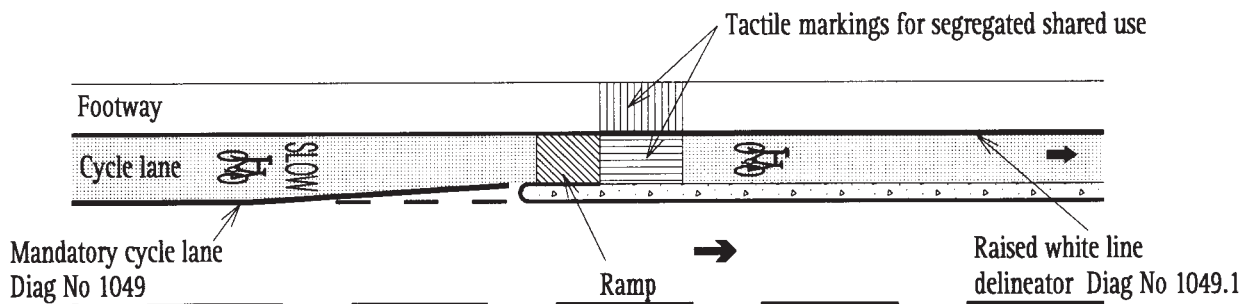
Cycle Track Joining and Leaving Carriageway – Figure 4.8



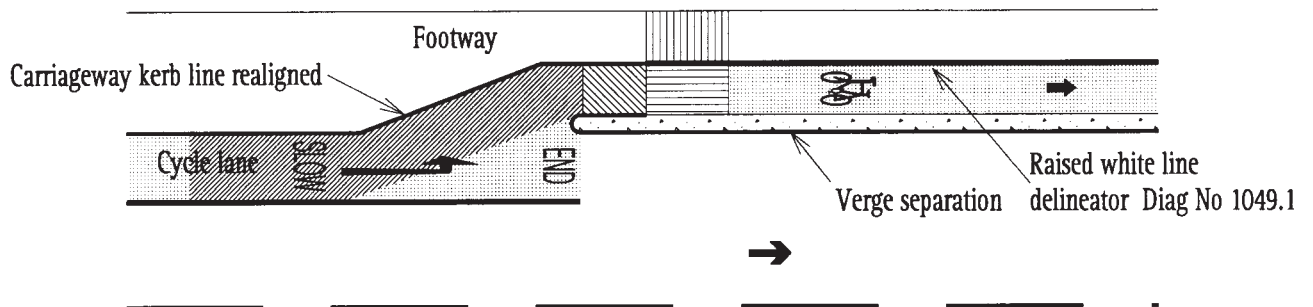
Joining Carriageway: Option 1



Joining Carriageway: Option 2



Leaving Carriageway: Option 1



Leaving Carriageway: Option 2

Chapter 5 - Junctions and Crossings

Continuity is essential to the popularity of any cycle route, therefore the proper resolution of junction features is critical for its success. For the National Cycle Network, not only must junction details provide a safe solution, but they should also exhibit due regard for all types of road user. In particular, the quality of detail and the level of priority given to cyclists and pedestrians must reinforce the perception that they are welcome in the area - near urban centres possibly more so than motorists.

Use of Guidelines

In this section the layouts for typical junctions, which might be met along a cycle route, are shown including signing and marking requirements.

The junctions and crossings illustrated are arranged in a generalised sequence, starting with the simpler crossings of minor roads and accesses, progressing to major road crossings and more complex schemes.

The National Cycle Network, being a demonstration of high quality cycling provision, should have priority over private entrances and minor side roads wherever practicable. See Figure 5.4.

Crossing Priority

The assessment of the appropriate form of crossing facility at any one location will depend on a number of site specific factors. LTN 1/95 establishes a methodology for assessing crossing sites and includes a framework for the comparison of options. This procedure can be adapted for the evaluation of National Cycle Network crossings. An example of a site assessment record sheet for cycle/pedestrian crossings is included in Appendix 11 and Figure 5.1 gives a worked example of the assessment framework applied to a National Cycle Network crossing.

The delay assessment should include the projected increase in crossing movements as a result of the implementation of the National Cycle Network and local cycling facilities. The effect of delay on motor vehicles must be considered, but will not normally over-rule the provision of a crossing where there is a clear difficulty for cyclists and pedestrians.

Delay at junctions reduces the attractiveness of a route and therefore situations should be avoided where the cyclist would be required to stop or give way frequently. Toucan and pedestrian crossings should not unnecessarily delay cyclists and pedestrians once they have made a demand on it.

The highest level of provision for cyclists should be made, commensurate with the results of an assessment using the LTN 1/95 methodology.

The following table of speed/flow criteria for the carriageway to be crossed provides guidance in helping to determine the appropriate form of crossing. Whilst these criteria are important, other aspects of a crossing **MUST** be considered and this should only be done by using the LTN 1195 methodology. The need for measures to reduce vehicle speeds on the main road approaches should be addressed if necessary. The figures in the table are to be treated as guides only and not precise boundaries.

Crossing Facility	85 percentile speed mph	Vehicle Flow 2 way vpd
Cycle Track Priority	<30	<4000
Cycles Give Way to Cars	<50	<6000
Cycles Give Way to Cars	<50	<8000
with Central Refuge	*<60 rural	<10000 rural
Signal Control	<50	>8000
Grade Separated	>50	>8000
	*>60 rural	>10000 rural

*The criteria have been extended for the rural area where the provision of signal control is likely to be unacceptable and where grade separated crossings may also be problematic e.g. in Areas of Outstanding Natural Beauty or National Parks.

Visibility

At junctions and crossings it is important that there is adequate visibility between cyclists and drivers, and between cyclists and pedestrians. The cycle route should be clearly marked both to guide cyclists and to inform drivers of the National Cycle Network route through the junction. It is recommended that, on the approaches to and within the junctions and crossings, the surface of the cycle track or lane be provided with a colour contrast treatment as a warning to cyclists of the potential hazard, and to discourage motorists from encroaching into the cycle facility.

Signalised Controlled Junctions

Signal control for cyclists can be used at junctions to reduce or eliminate conflict and at crossings to create a safe period for the manoeuvre. At signal controlled junctions advanced stop lines should be used wherever feasible. The need to allocate additional time as well as space to cyclists and pedestrians should also be considered. Once a demand has been registered, pedestrians and cyclists should not experience undue delay. Signal timings should recognise that many National Cycle Network users will travel more slowly than commuter cyclists.

Roundabouts

Conventional UK roundabouts can pose particular dangers for cyclists. Accident rates for cyclists on roundabouts are approximately 2-3 times higher than at traffic signal junctions. It is therefore important to consider carefully whether the cycle route can be designed to avoid existing dangerous roundabouts. At new junctions due weight should be given to the advantages for two-wheeled vehicles and pedestrians provided by a traffic signal junction (with appropriate cycle and pedestrian facilities) as opposed to a roundabout.

If the National Cycle Network route cannot avoid the roundabout it may be possible to modify it to an acceptable design as below.

- a) "Continental style" roundabout - designed for use by mixed traffic. See Figure 5.16.
- b) Roundabout with segregated cycle track. See Figure 5. 16.
- c) Full time signalisation of the roundabout.

The continental style roundabout complies with the recommendations of TD 16193 Geometric Design of Roundabouts but places greater emphasis on speed reduction of motor vehicles as opposed to capacity requirements which tend to be the predominant factors governing present UK roundabout design.

Full time signalisation of the roundabout is expensive and is only likely to be considered in heavily congested situations. However, it does have advantages for cyclists. It should eliminate the predominant type of accident, between motorists entering and cyclists circulating the roundabout.

Advanced stop lines should be considered in association with signalisation. The use of part time signals does not provide a significant benefit to cyclists in terms of reduced accident rates. Generally it will not be appropriate to route the National Cycle Network through such heavily trafficked junctions.

Peripheral cycle lanes on the circulating carriageway of the roundabout do not improve safety for cyclists.

Mini Roundabouts

Accident rates for cyclists at mini roundabouts are lower than those at other types of roundabout but slightly higher than the rates for priority junctions and traffic signal junctions.

Mini roundabouts may be appropriate on the National Cycle Network where cyclists need to turn right or where speeds need to be reduced. Mini roundabouts may also be appropriate to reduce delays to cyclists on the National Cycle Network where they join or cross the major road from a minor road, where priorities cannot be reversed. Such roundabouts should have adequate entry and exit deflections. They should have a raised central island which ensures sufficient deflection for cars and smaller vehicles whilst allowing large HGVs to overrun them on tight turns. Excessive visibility to the right on entry can lead to accidents. It is recommended that mini roundabouts on cycle routes be designed as speed reducing measures with single lane entries and that the approaches normally have other traffic calming features associated with them. (See also Chapter 6).

Assessment Framework for Selecting Crossing Type - Figure 5.1

SITE ASSESSMENT - Considerations

Location	Grid reference, description of highway, usage by buses
Highway Facilities	Lighting, gradient, speed limit skid resistance
Visibility	Impact of parking and vehicle speeds on stopping sight distance and visibility of pedestrians and cyclists approaching crossing
Complexity	Adjacent junctions, entrances, schools, acting to divert drivers attention from crossing points
Pedestrian /Cycling Traffic	Existing and projected traffic by type or group
Motor Traffic	Existing and projected by type and speed
Accidents	Records, qualitative analysis for projected traffic

CROSSING OPTION ASSESSMENT - Evaluation Matrix

Example of an evaluation matrix showing type of information required.

Factor	Do Nothing (Advisory Crossing)	Advisory Crossing With Island	Toucan Crossing
Danger /Unpleasantness for pedestrians/cyclists	Very unpleasant/dangerous due to traffic speed and HGVs	Unpleasant due to traffic speed and HGVs	Reasonably pleasant and safe
Delay for Pedestrians/ Cyclists. Average wait in seconds peak period	30 (able)/120 (elderly) in peak period	15 (able) /40 (elderly) in peak period	1 - 3 seconds after end of vehicle minimum green period
Vehicle delay in peak periods	None	None	2 stops per minute of 12 seconds
Effect on road capacity	Not reduced	Not reduced	40% Reduction
Installation costs	None at this stage	1500	20,000
Operating costs	None	100	2000
Representations	No support	Police also suggest speed reduction measures. Local council in favour, on cost grounds	Petition (140 signatures) 8 letters following accident to schoolgirl on bike

(Based on LTN 1/95)

Cycle Track Priority Crossing - Figure 5.2

Notes

1. Cycle track priority road crossing should only be used for crossing single carriageway roads where the vehicle flow is less than 4000 vehicles per day and vehicle speed is less than 30mph. Where speeds exceed this, speed reducing features may be appropriate.
2. The flat top road hump should be constructed in a contrasting colour or material to give prominence to the traffic calming feature (See Chapter 9). The road hump design and location must comply with the Road Hump Regulations, including signing requirements.
3. This facility will require reasonable visibility between the cycle track and the carriageway dependent upon the circumstances at a particular location. Reasonable visibility will therefore be provided between the cycle track and the footway and thus it is unlikely that sign Diag No. 963.1 will be necessary.
4. The designer should be aware that the maximum permitted height of a road hump is 100mm, and kerbs are generally 125mm. Providing a level crossing may necessitate dropping the kerb line slightly.
5. This detail shows an arrangement to give cyclists priority to cross a minor road. In choosing such an arrangement designers should be aware that this does not accord the same priority to pedestrians.
6. Diag No. 950 is shown on this drawing to illustrate the range of circumstances in which it can usefully be employed. In practice, it will normally be sited at a greater distance from the feature than it has been possible to show in the drawing. Advice is given in Chapter 4 of the Traffic Signs Manual. Note that the distance on plate Diag No. 572 should be in yards.
7. Diag No. 7014 "Changed Priorities Ahead" will be used on the approaches to the crossing when relevant. When priorities are changed then local publicity will be given to the change.

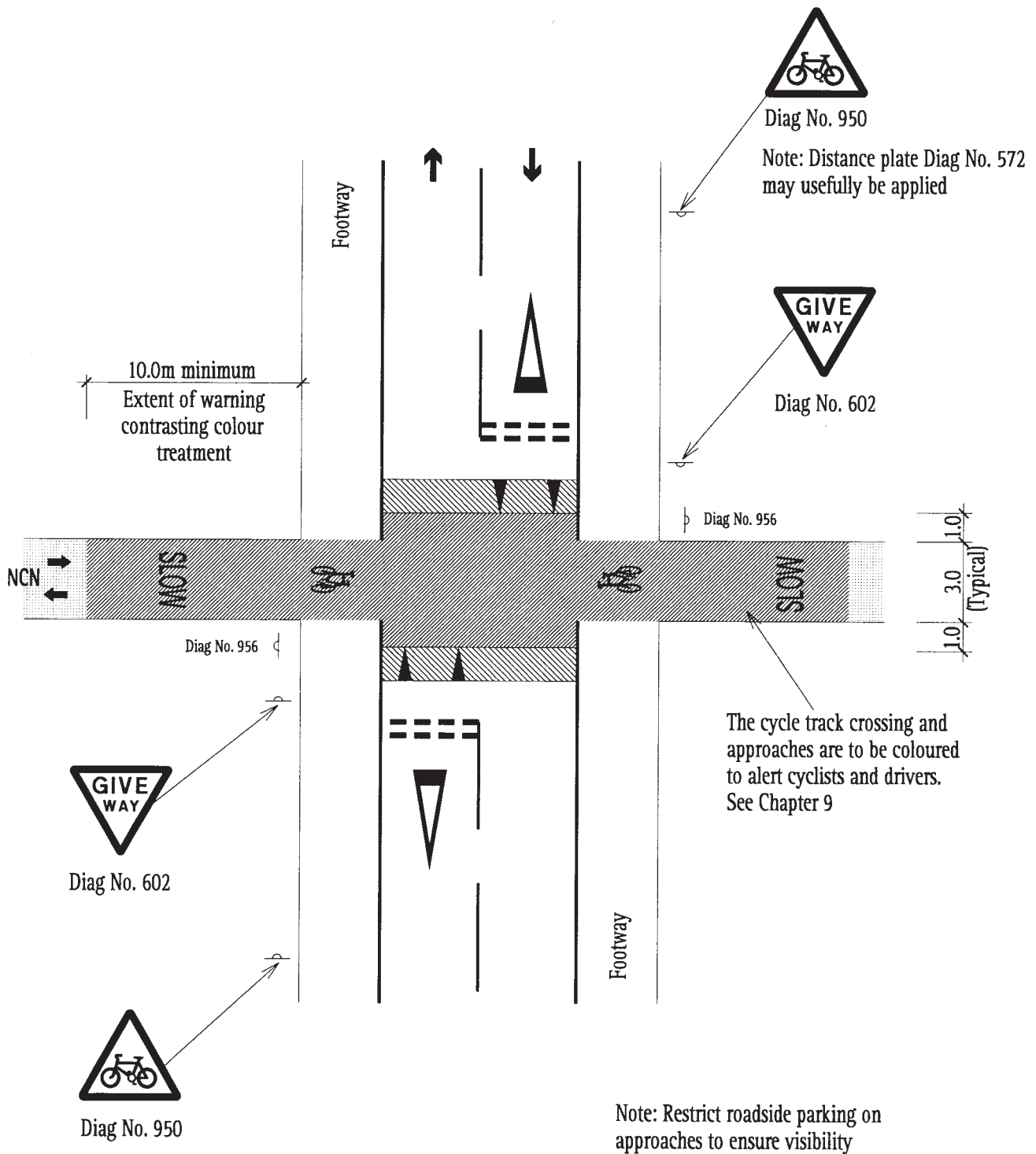
References

1. Local Transport Note 1/86 Cyclists at Road Crossings and Junctions (S)
2. Traffic Advisory Leaflet 4/90 Tactile Markings for Segregated Shared Use by Cyclists and Pedestrians
3. Traffic Advisory Leaflet 7/96 The Highways (Road Humps) Regulations 1996 (S)
4. The Highways (Road-Humps) Regulations 1996
(SI 1996 No. 1483) (S)
5. The Highways (Traffic Calming) Regulations 1993
(SI 1993 No. 1849) (S)

Examples

1. OXFORD: Marston Road
(Oxfordshire County Council)
2. OXFORD: Marston Ferry Road
(Oxfordshire County Council)

Cycle Track Priority Crossing – Figure 5.2



Mandatory Cycle Lane: Continuation Across Minor Road - Figure 5.3

Notes References

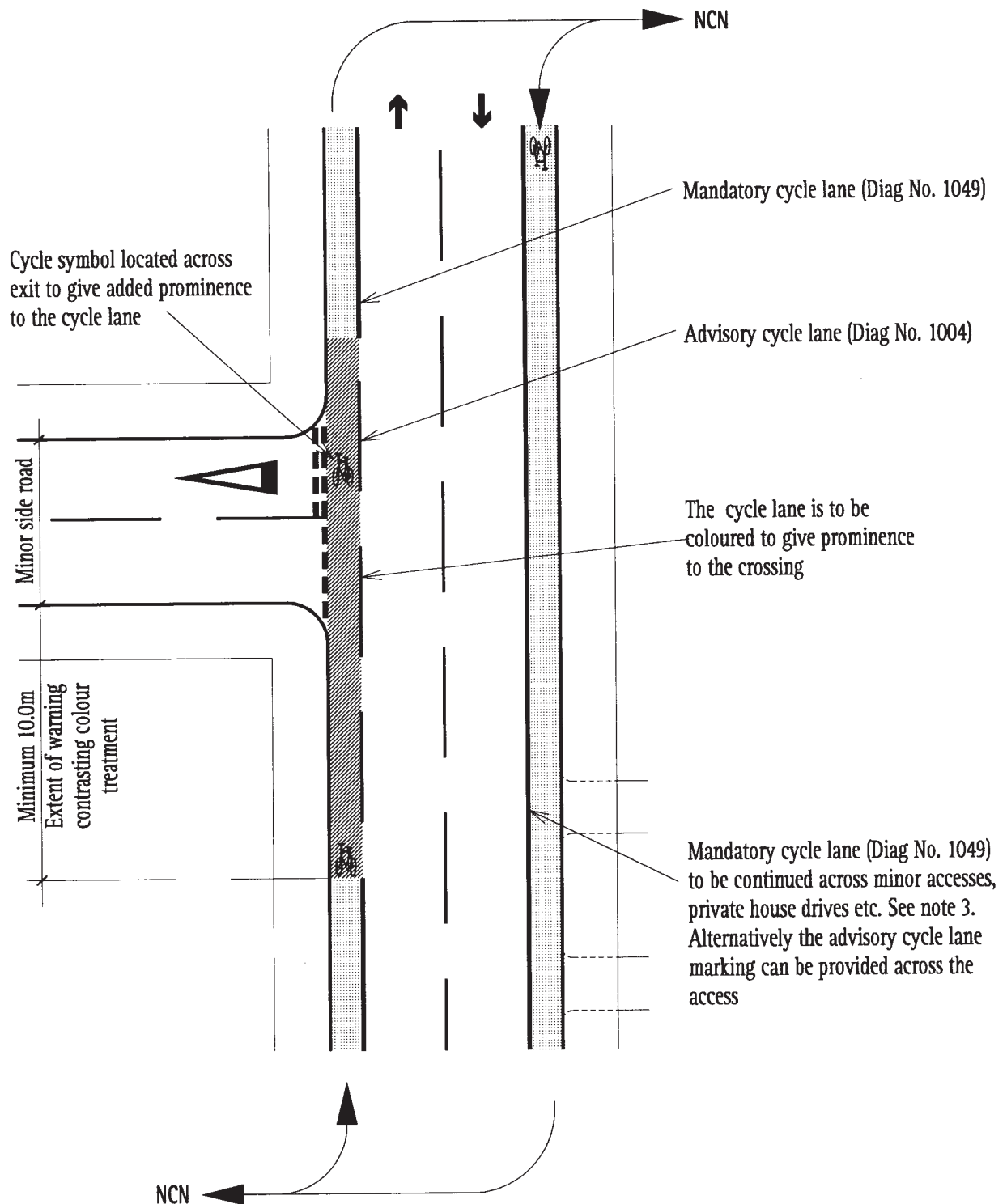
1. It is recommended that the cycle lane be coloured when it crosses the junction and on the approach. This approach should be considered in line with the approach to colouring of cycle lanes adopted elsewhere in a local area.
2. Where a mandatory cycle lane is continued by an advisory cycle lane across a minor road, the advisory cycle lane should begin at least 10m in advance of the junction to avoid abrupt turns by motor vehicles.
3. Where mandatory and advisory cycle lanes have been shown, the prescribed upright signs to accompany the road marking have been omitted for clarity.
4. Where a mandatory cycle lane continues across minor accesses then the Traffic Regulation Order will need to include an exemption to allow vehicles needing to use these accesses to enter the cycle lane at these points. Alternatively, these can be treated in the same way as more major accesses, incorporating a short section of advisory cycle lane marking.
5. Use of the triangular marking Diag No. 1023 is recommended on the minor road approach to emphasise the need to give way.

1. Local Transport Note 1/86
Cyclists at Road Crossings and Junctions (S)

Examples

1. OXFORD: Banbury Road
(Oxfordshire County Council)
2. YORK: Melrose Gate, Bootham, The Mount
(York City Council)
3. EDINBURGH: Queensferry Street
(Edinburgh City Council)

Mandatory Cycle Lane: Continuation Across Minor Road – Figure 5.3



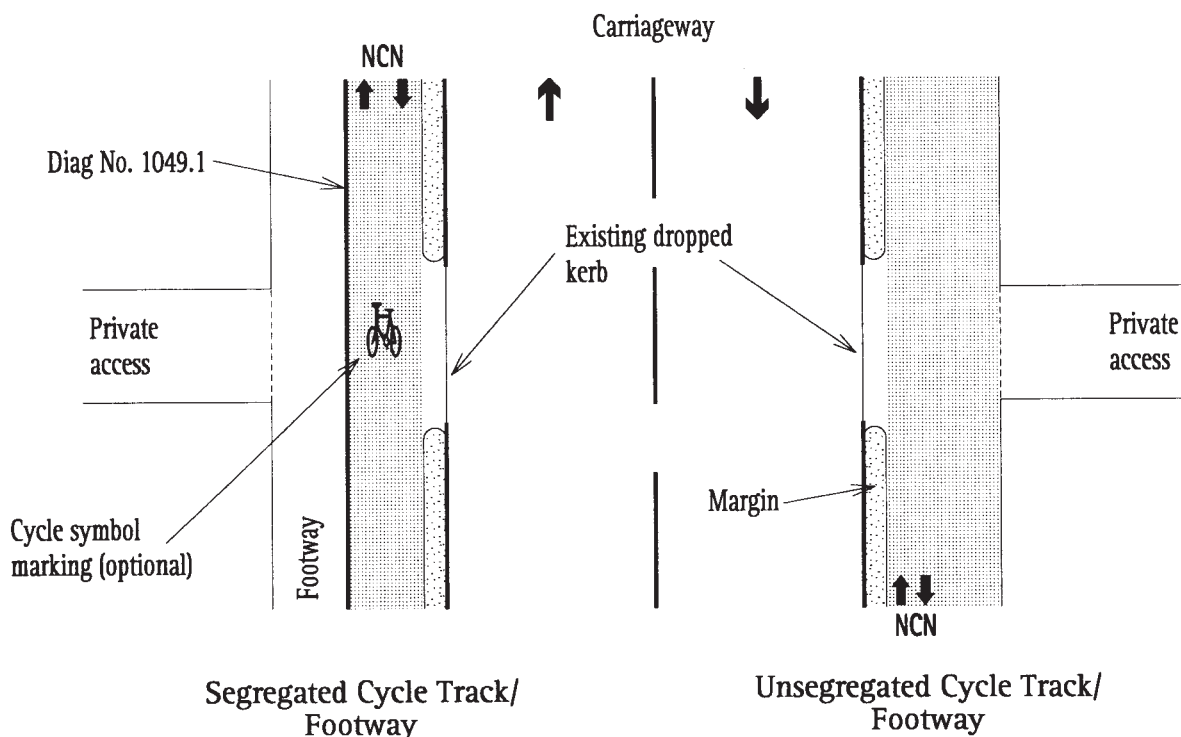
Cycle Track/Footway Crossed by Private Access - Figure 5.4

Notes

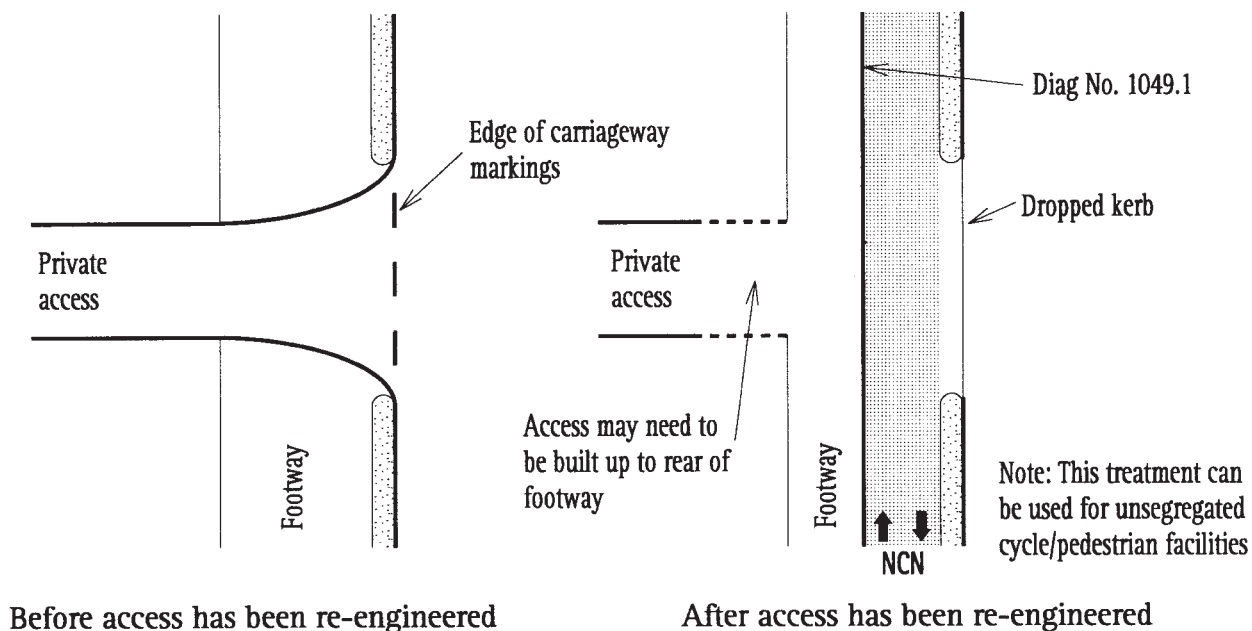
1. Private accesses with less than 100 vehicle movements per day can be treated in this manner where a cycle track/footway crosses the access.
2. Where the private access is formed by dropped kerbs in line with the carriageway kerb line then the crossing can be provided with no additional measures except the raised white line delineator Diag No. 1049.1 in the case of the segregated cycle track/footway.
3. Where the private access has a kerbed entrance, the purpose of the treatment is to change the perception of drivers turning into the access from that of continuing on the carriageway to that of crossing an area designated for pedestrians and cyclists. For this reason it is recommended that the access be re-engineered as shown in preference to introducing a flat top road hump, which is a carriageway feature.
4. Where the entrance is built up the designer must consider drainage requirements.
5. Warning features which may be considered useful are: colour contrast treatment for the cycle track approaches to the access crossing, cycle marking Diag No. 1057 placed in the entrance to the access, sign Diag No. 950 with arrow plate indicating that the presence of cyclists should be anticipated. These warning features should be considered as part of a general assessment of the crossing including the layout, cycle/vehicle flows and visibility.
6. Where intervisibility of the cycle track and private access is very poor, additional warning signs should be considered.

Cycle Track/Footway Crossed by Private Access – Figure 5.4

Private Access with Dropped Kerbs in Line with Carriageway Kerblines



Private Access with Kerbed Entrance Re-Engineered



Cycle Track Priority Crossing "Bending Out" at Minor Road - Figure 5.5

Notes

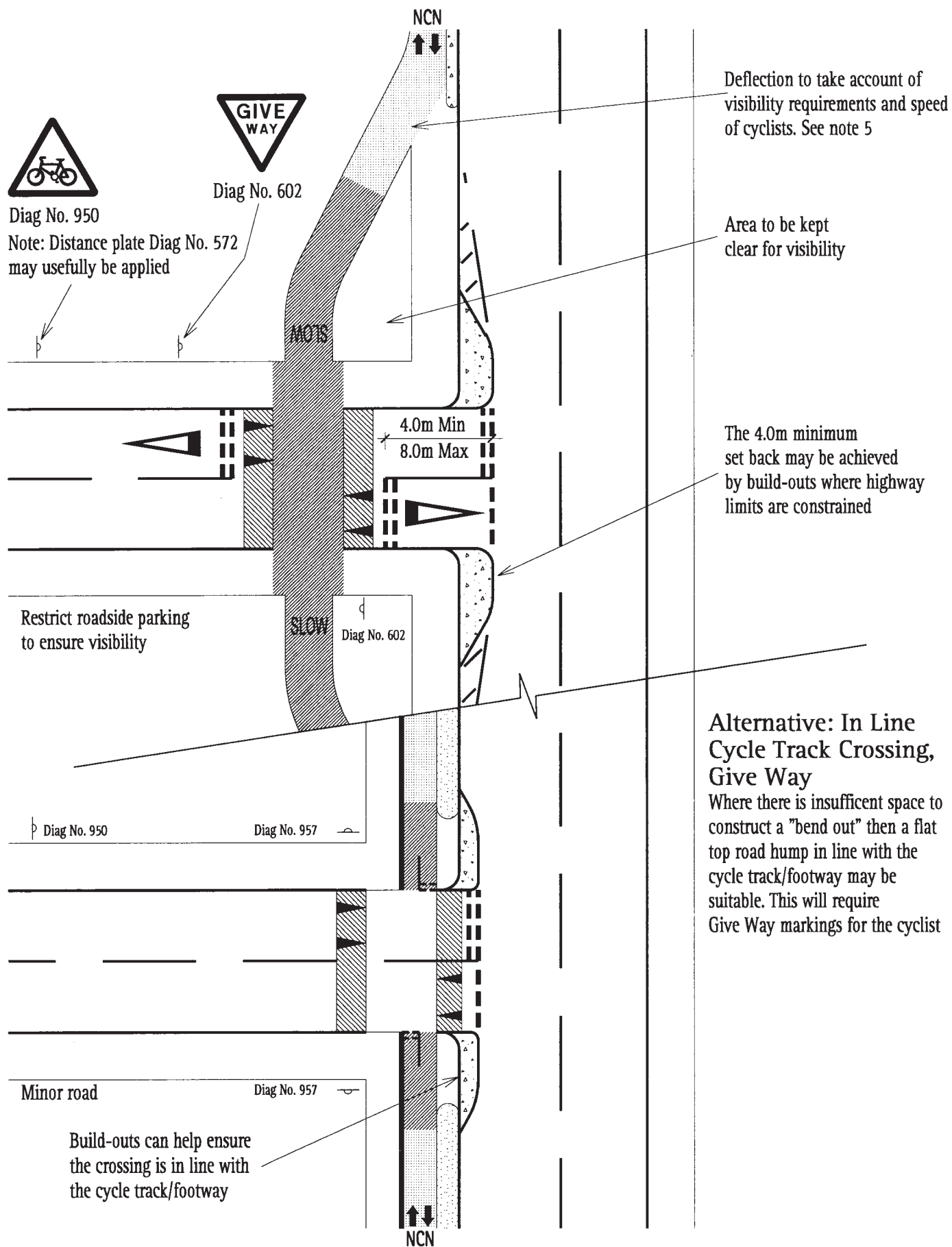
1. Cycle track priority road crossings should only be used for crossing roads where the vehicle flow is less than 4000 vehicles per day and vehicle speed is less than 30mph.
2. The flat top road hump should be constructed in a contrasting colour or material to give prominence to the traffic calming feature (see Chapter 9). The road hump design and location must comply with the Road Hump Regulations, including signing requirements.
3. The designer should be aware that the maximum permitted height of a road hump is 100mm, and kerbs are generally 125mm. Providing a level crossing may necessitate dropping the kerb line slightly.
4. This facility will require reasonable visibility between the cycle track and the carriageway dependent upon the circumstances at a particular location. Reasonable visibility will therefore be provided between the cycle track and the footway and thus it is unlikely that sign Diag No. 963.1 will be necessary.
5. It is important for safety that the "bend out" is designed so as to provide the cyclist with a straight approach to the crossing. The cycle path should not be deflected through an angle greater than 45° and should not give the cyclist the feeling of a detour.
6. Diag No. 950 is shown on this drawing to illustrate the range of circumstances in which it can usefully be employed. In practice, it will normally be sited at a greater distance from the feature than it has been possible to show in the drawing. Advice is given in Chapter 4 of the Traffic Signs Manual.
7. Diag No. 7014 "Changed Priorities Ahead" will be used on the approaches to the crossing when relevant. When priorities are changed then local publicity will be given to the change.
8. Where build-outs or flat top road humps are constructed the designer must consider highway drainage requirements.
9. This detail shows an arrangement to give cyclists priority to cross a minor road. In choosing such an arrangement designers should be aware that this does not accord the same priority to pedestrians.

1. Local Transport Note 1/86 Cyclists at Road Crossings and Junctions (S)
2. Traffic Advisory Leaflet 4/90 Tactile Markings for Segregated Shared Use by Cyclists and Pedestrians
3. Advisory Leaflet 7/96 Highways (Road Humps) Regulations 1996 (S)
4. The Highways (Road Humps) Regulations 1996 (SI 1996 No. 1483) (S)
5. The Highways (Traffic Calming) Regulations 1993 (SI 1993 No. 1849) (S)
6. Sign Up for the Bike - CROW 1993

Examples

1. OXFORD: Marston Road
(Oxfordshire County Council)
2. OXFORD: London Road
(Oxfordshire County Council)
3. OXFORD: Marston Ferry Road
(Oxfordshire County Council)
4. WESTON SUPER-MARE: Worle Parkway
(Avon County Council)

Cycle Track Priority Crossing "Bending Out" at Minor Road - Figure 5.5



Toucan Crossing - Figure 5.6

Notes

1. Where traffic signal control is thought appropriate, designers should refer to the assessment framework described in LTN 1195 and Figure 5.1.
2. In urban areas, where the 85 percentile speed exceeds 50mph, speed reduction measures should be taken before an at-grade crossing is introduced.
3. Crossing should be located where adequate visibility is available.
4. Special authorisation is required for both the cycle signal aspect and the modified push button plate.
5. The use of the 'U' pattern of tactile surfacing guides blind and partially sighted users to the appropriate position and is the design recommended for Toucan crossings.
6. A 1200mm depth of tactile surfacing at the dropped kerb is recommended when the pedestrian approach is straight on to the crossing. In other circumstances an 800mm depth of tactile surfacing at the dropped kerb is recommended.
7. The provision of the straight through cycle facility should be used with care if there are significant numbers of pedestrians using the crossing.
8. Care should be taken in the positioning of poles, any guard railing and other street furniture, so as not to create conflict by constricting movements.

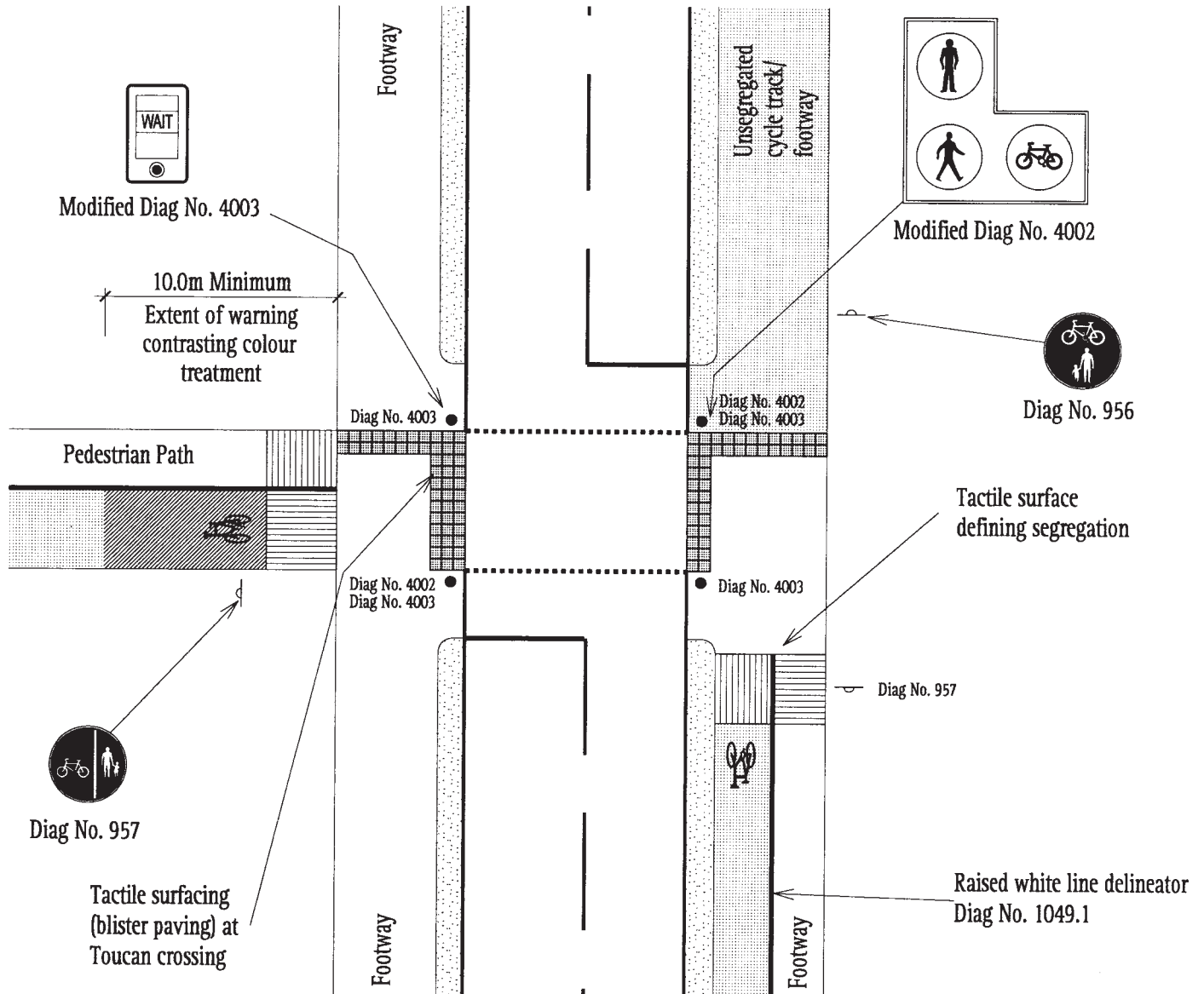
References

1. Traffic Advisory Leaflet 10/93 TOUCAN An Unsegregated Crossing for Pedestrians and Cyclists
2. Local Transport Note 1/95 The Assessment of Pedestrian Crossings
3. Local Transport Note 2/95 The Design of Pedestrian Crossings
4. Local Transport Note 1/86 Cyclists At Road Crossings and Junctions (S)
5. Traffic Advisory Leaflet 4/90 Tactile Markings for Segregated Shared Use by Cyclists and Pedestrians
6. Disability Unit Circular 1/91 The Use of Dropped Kerbs and Tactile Surfaces at Pedestrian Crossing Points
7. Disability Unit Draft Guidance Note: Guidance on the Use of Tactile Paving Surfaces

Examples

1. BRISTOL: A420/Bristol Et Bath Railway Path
(Avon County Council)
2. SOUTHAMPTON: The Avenue
(Hampshire County Council)
3. EDINBURGH: Melville Drive/Levern Terrace
(Edinburgh City Council)

Toucan Crossing – Figure 5.6



Note: The blister paving layouts have been taken from the Disability Unit Draft Guidance Note, Guidance on the Use of Tactile Paving Surfaces

Cycle Track Give Way Crossing - Figure 5.7

Notes

1. Where traffic flows are less than 4000 vehicles per day on a single carriageway the cycle track priority crossing should be considered.
2. This detail is not suitable for vehicle flows greater than 6000 vehicles per day or where speeds are greater than 50mph.
3. If visibility between the cycle track and the footway is inadequate and it is not possible to incorporate measures to improve visibility then traffic sign Diag No. 963.1 may be necessary to advise pedestrians of a cycle track crossing. Unnecessary use of this will cause sign clutter.
4. Where visibility is poor (see Figure 8.6) it is preferable to use all the signs and markings available for the Give Way (Diag No.s 602, 1003 and 1023) for the cyclist rather than a barrier/chicane with "Cyclists Dismount" signs which are not considered acceptable. The use of the "Stop" sign is not appropriate for cycles, given the slower speeds at which cyclists can be expected to be travelling compared with motor vehicles. The "Stop" sign also requires approval from the Secretary of State.
5. Increased prominence of crossings or additional route guidance for cyclists may be necessary. Discussion with Sustrans and DOT to determine an appropriate solution is encouraged.
6. Diag No. 950 is shown on this drawing to illustrate the range of circumstances in which it can usefully be employed. Its location is diagrammatic only. Advice is given in Chapter 4 of the Traffic Signs Manual. Note that the distance on plate Diag No. 572 should be in yards.
7. Where carriageway width permits, it may be advantageous to provide a central refuge. This will benefit both cyclist and pedestrian safety.
8. A build-out can usefully be employed as a traffic calming feature, where the road is heavily parked or where there is a high pedestrian flow on the footway. Narrowing the carriageway to a single lane with build-outs on both sides and assigning priority to one direction is a valuable feature for a cycle track crossing. However, care must be taken not to create problems for cyclists on the main carriageway. See Figure 6.1 note 1.

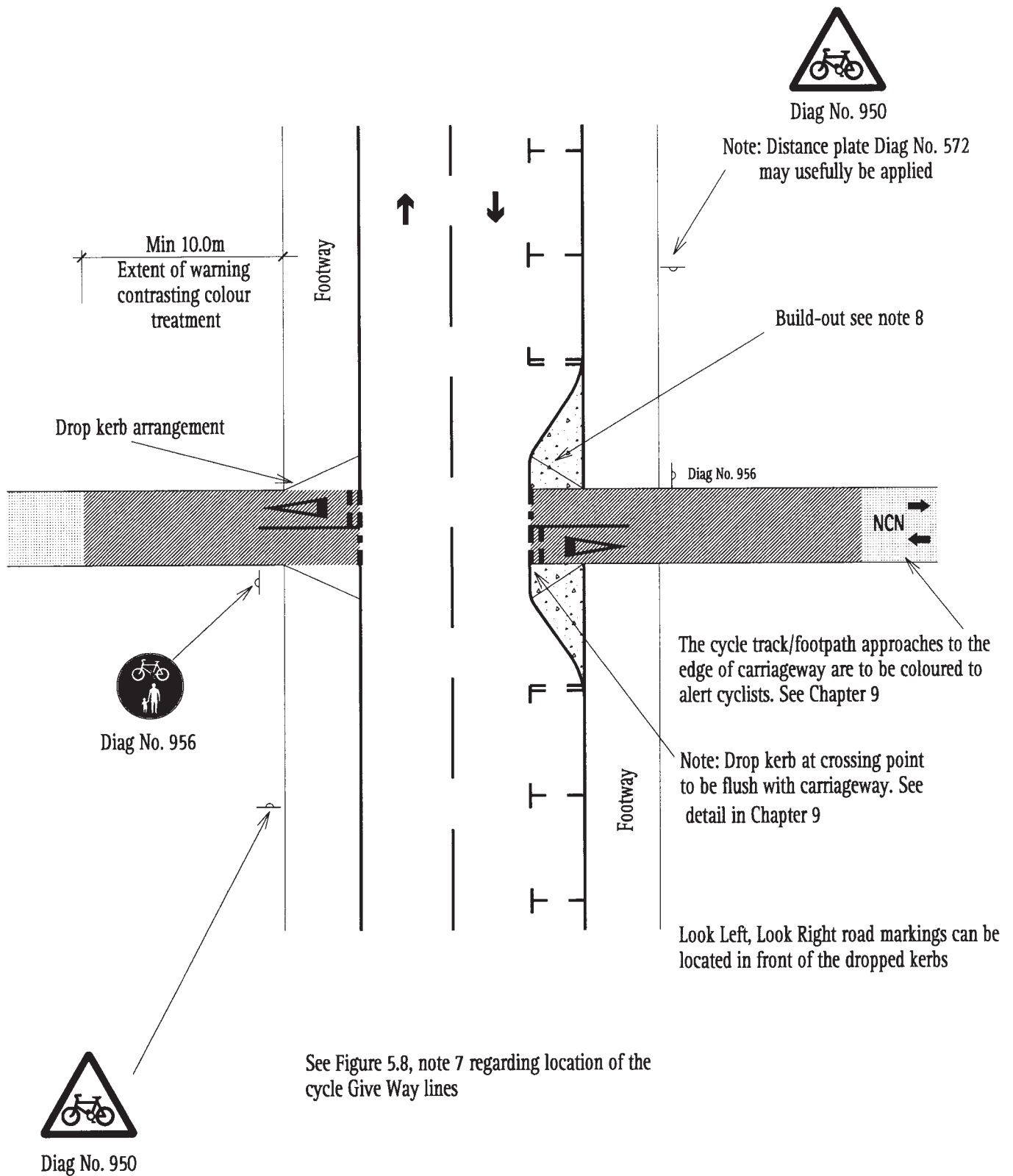
References

1. Local Transport Note 1/86
Cyclists At Road Crossings and Junctions (S)
2. Traffic Advisory Leaflet 4/90
Tactile Markings for Segregated Shared Use by Cyclist and Pedestrians

Examples

1. MILTON KEYNES: Redways, various minor road crossings (Buckinghamshire County Council).
2. NOTTINGHAM: A6005 Woodside Road, junction with B6464 Broadgate (Nottinghamshire County Council)
3. LONDON: Ambassador Cycle Route crossing Pimlico Road (Westminster City Council)
4. WESTON- SUPER-MARE: Ewart Road (Avon County Council) NOTTINGHAM: University Boulevard (Nottinghamshire County Council)

Cycle Track Give Way Crossing – Figure 5.7



Cycle Track Crossing with Refuge Island - Figure 5.8

Notes

1. In urban areas, this detail is not suitable for vehicle speeds greater than 50mph and/or traffic flows greater than 8,000 vehicles per day.
2. If visibility between the cycle track and the footway is inadequate and it is not possible to incorporate measures to improve visibility then traffic sign Diag No. 963.1 may be necessary to advise pedestrians of a cycle track crossing. Unnecessary use of this will cause sign clutter.
3. Where visibility is poor (see Figure 8.6) it is preferable to use all the signs and markings available for the Give Way (Diag No.s 602, 1003 and 1023) for the cyclist rather than a barrier/chicane with "Cyclists Dismount" signs which are not considered acceptable. The use of the "Stop" sign is not appropriate for cycles, given the slower speeds at which cyclists can be expected to be travelling compared with motor vehicles. The "Stop" sign also requires approval from the Secretary of State.
4. Guidance details for minimum carriageway beside the refuge are given in Figure 6.2.
5. Generally the crossing area within the refuge should have a longitudinal width between 3.0m and 4.0m (absolute minimum 2.5m) to accommodate groups of cyclists/families, and should be flush with the adjacent carriageway.
6. Diag No. 950 is shown on this drawing to illustrate the range of circumstances in which it can usefully be employed. Its location is diagrammatic only. Advice is given in Chapter 4 of the Traffic Signs Manual. Note that the distance on plate Diag No. 572 should be in yards.
7. Where pedestrian flows on the footway are high it may be advantageous to bend out the footway (as shown), or provide a build-out (see Figure 5.7). This will allow cyclists to wait at the Give Way line without impeding pedestrians. If this is not feasible then the Give Way lines can be placed at the back of the footway.
8. Segregation on the immediate approaches to the crossing may not be appropriate in all circumstances, as research has shown that cyclists and pedestrians will wait and cross in the most convenient positions for the movement they are making, which will not necessarily coincide with the space allocated to them. Consideration may be given to the inclusion of Give Way lines within the refuge.

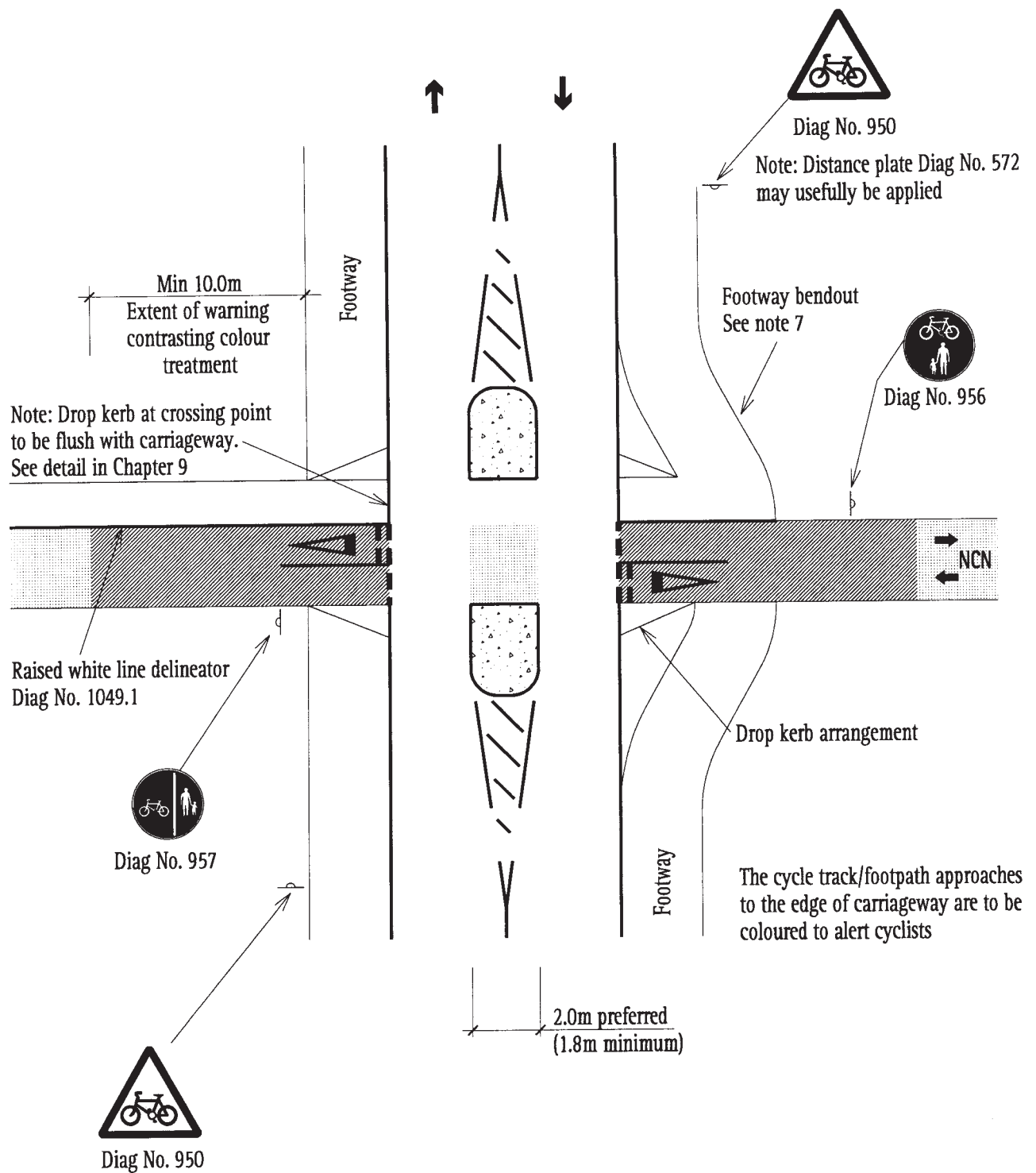
References

1. Local Transport Note 1/86: Cyclists at Road Crossings and Junctions (S)
2. Traffic Advisory Leaflet 4/90 Tactile Markings for Segregated Shared Use by Cyclists and Pedestrians

Examples

1. NOTTINGHAM: University Boulevard, Beeston/Middle Street
(Nottinghamshire County Council)
2. OXFORD: **Headington Roundabout**
(Oxfordshire County Council)

Cycle Track Crossing with Refuge Island – Figure 5.8



Staggered Cycle Track Crossing of Major Road - Figure 5.9 (Two-Way Segregated Cycle Lane Within Parking Bay Area)

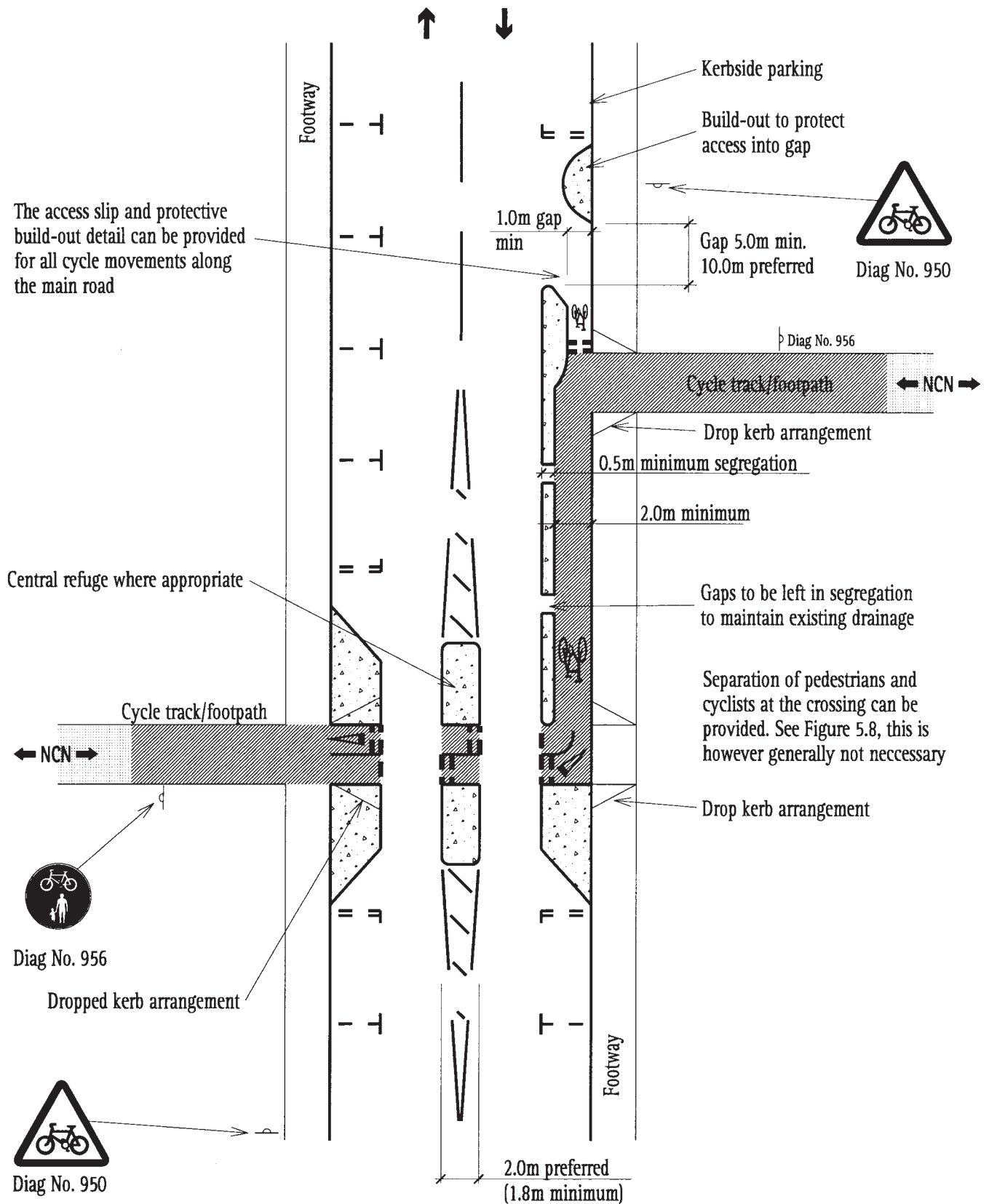
Notes

1. The 0.5m wide segregation island shown beside the cycle lane is not wide enough to allow the erection of street furniture.
2. Where build-outs or segregation islands are constructed the designer should consider highway drainage requirements.
3. It is recommended that the surface of the approaches to the crossing be coloured. This approach should be considered in line with the approach to colouring of cycle facilities adopted elsewhere in the local area.
4. Where carriageway width permits, it is advantageous to provide a central refuge. This will benefit both cyclists and pedestrians.
5. Generally the crossing area within the refuge should have a longitudinal width between 3.0m and 4.0m (absolute minimum 2.5m) and should be flush with adjacent carriageway. This detail can be provided more easily by constructing two islands in the carriageway rather than a complete refuge with dropped kerbs.
6. Guidance details for minimum carriageway width beside the refuge are given in Figure 6.2.
7. The preferred width of a one-way cycle lane is 2.0m, minimum width 1.5m. Two-way cycle lanes should preferably be 3.0m wide and should be physically segregated from motor vehicles.
8. A width of 1.2m is sufficient to allow access for the largest types of cycle currently used by people with disabilities.

References

1. Local Transport Note 1/86: Cyclists at Road Crossings and Junctions (S)
2. Traffic Advisory Leaflet 4/90: Tactile Markings for Segregated Shared Use by Cyclists and Pedestrians
3. The Highways (Traffic Calming) Regulations 1993 (SI 1993 No. 1849) (S)
1. LONDON: King Street, Hammersmith
(London Borough of Hammersmith and Fulham)
2. BRISTOL: Coronation Road
(Avon County Council)
3. DERBY: Exeter Bridge
(Derbyshire County Council)

Staggered Cycle Track Crossing of Major Road – Figure 5.9 (Two-Way Segregated Cycle Lane Within Parking Bay Area)



Offset Crossing at Unsignalised Junction - Figure 5.10

Notes

1. This detail has been drawn in an urban setting, the same detail may be used on rural roads.
2. Traffic Signal Control may be appropriate. Designers should refer to the Assessment Framework described in LTN 1/95 and Figure 5. 1.
3. In urban areas, where the 85 percentile speed exceeds 50mph, speed reduction measures should be taken before an at-grade crossing is introduced.
4. Crossings should be located where adequate visibility is available.
5. The refuges should be located as close to the junction as possible or cyclists may ignore them. Deviations from the cyclist's desire line should be minimised. The alignment of the cycle tracks either side of the crossing will be crucial.
6. Refuge set back distance should not be greater than 40m otherwise the detour becomes onerous. If one or both of the right turns off the major road are prohibited, then the central refuge island can be located closer to the minor road junction.

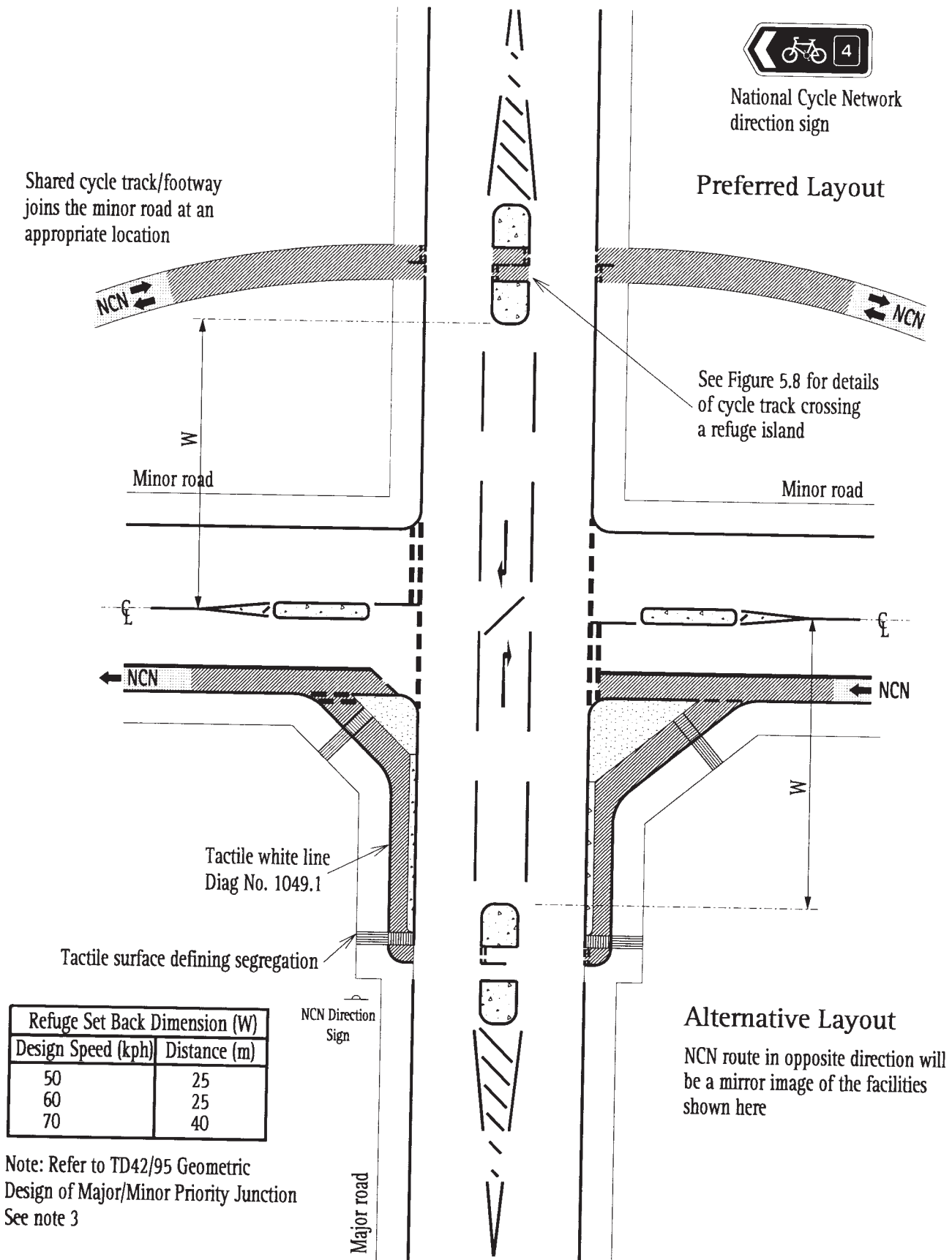
References

1. TD 42/95 Geometric Design of Major/Minor Priority Junctions
2. Local Transport Note 1/86: Cyclists at Road Crossings and Junctions (S)

Examples

1. HUCKNALL: A611 Hucknall Bypass/Nottingham Road
(Nottinghamshire County Council)
2. HULL: Sutton Road/Holwell Road
(Humberside County Council)
3. SOUTHAMPTON: Millbrook Roundabout
(Hampshire County Council)

Offset Crossing at Unsignalised Junction - Figure 5.10



Staggered Cycle Track Crossing of Dual Carriageway - Figure 5.11

Notes

1. Generally provide see-through guard rails on the central refuges at all staggered road crossings.
2. The entrance into the staggered refuge should be such that cyclists turn left, facing oncoming traffic when approaching the exit.
3. The minimum entry width into the refuge should be 2.5m.
4. Traffic signal control may be appropriate. Designers should refer to the assessment framework described in LTN 119 5 and Figure 5. 1.
5. In urban areas, where the 85 percentile speed exceeds 50mph speed reduction measures should be taken before an at-grade crossing is introduced.
6. Where the road is more than 15.0m wide a staggered crossing is recommended. If the road width is greater than 11.0m a stagger should also be considered. Occasionally, the cycle track may have to be bent out locally to create an alignment through a stagger.
7. A minimum dimension of 3.0m is recommended between crossing limits on the central refuge.
8. The minimum width between guard rails is 2.0m. A sufficient width should be allowed to accommodate all users.
9. Diag No. 950 is shown on this drawing to illustrate the range of circumstances in which it can usefully be employed. In practice, it will normally be sited at a greater distance from the feature than it has been possible to show in the drawing. Advice is given in Chapter 4 of the Traffic Signs Manual.
10. If visibility between the cycle track and the footway is inadequate see Figure 5.8 notes 2 and 3.
11. Where pedestrian flows on the footway are high see Figure 5.8 note 7.

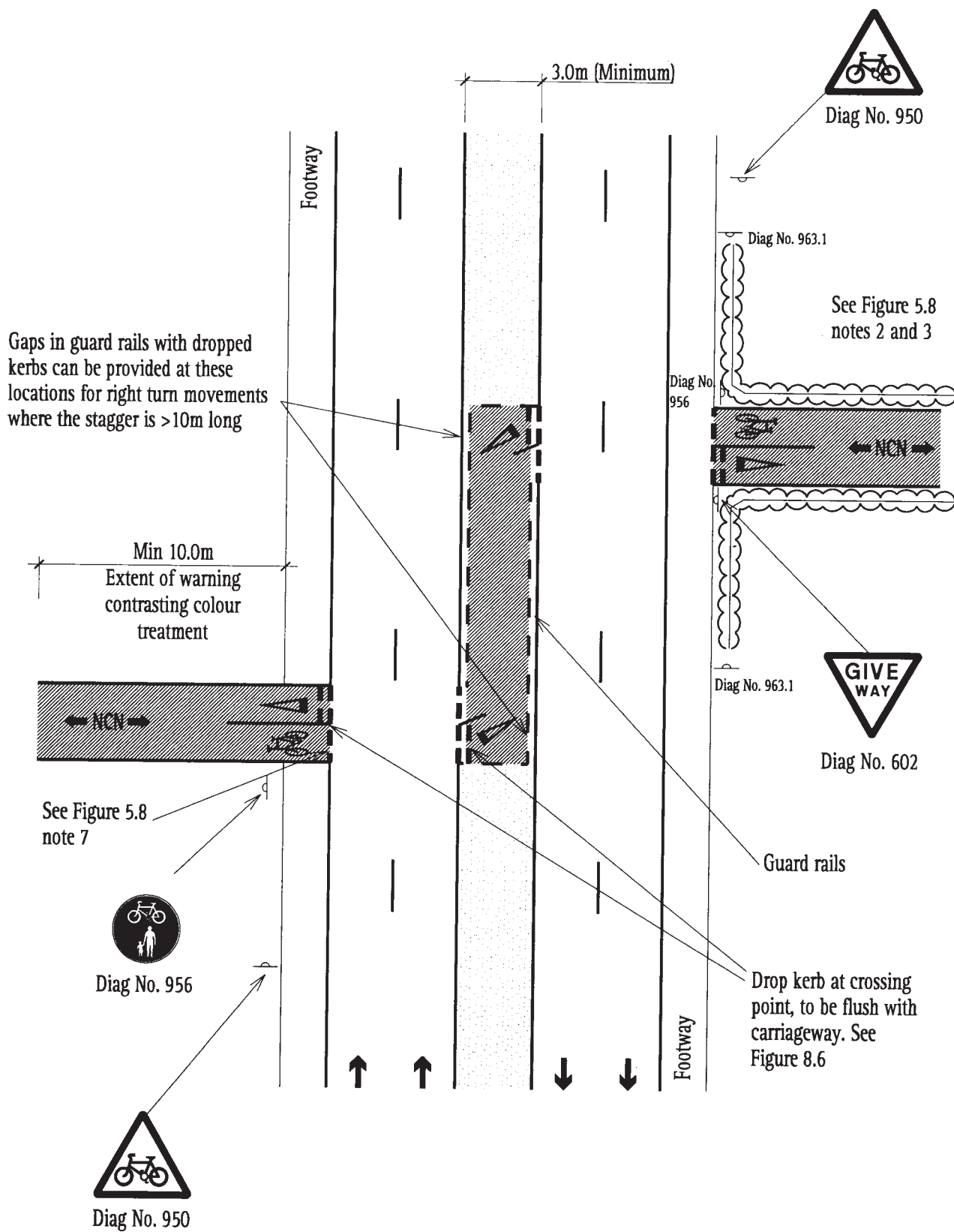
References

1. Local Transport Note 1/86: Cyclists at Road Crossings and Junctions (S)
2. Traffic Advisory Leaflet 4/90: Tactile Markings for Segregated Shared Use by Cyclists and Pedestrians
3. Local Transport Note 1/95 The Assessment of Pedestrian Crossings
4. Local Transport Note 2/95 The Design of Pedestrian Crossings

Examples

1. PRESTON: Hutton Roundabout, A59 Crossing, (Lancashire County Council)
2. NOTTINGHAM: West Bridgford, A60/Loughborough Road, (Nottinghamshire County Council)
3. DARLINGTON: A1157, Parkgate Crossing, (Durham County Council)
4. NOTTINGHAM: Hucknall Bypass, A611 (Nottinghamshire County Council)
5. PRESTON: A6 Ringway/Ormskirk Road (Lancashire County Council)

Staggered Cycle Track Crossing of Dual Carriageway - Figure 5.11



Minor Road Crossing Major Road at Signalised Junction - Figure 5.12

Notes

1. Advanced Stop Lines improve safety for cyclists and give them priority in an important situation. There is no evidence that they reduce saturation traffic flows.
2. Advanced Stop Lines have proved successful for vehicle flows up to 1000 per hour in one direction and with up to three lane approaches. However, on the National Cycle Network, they will normally be appropriate for right-turning cyclists on approaches with one or two lanes.
3. In order to give additional guidance to highlight a route to cyclists it may be appropriate to show route numbers. Details of appropriate signs are shown in Figure 9.1.
4. It is recommended that Advanced Stop Line reservoirs and cycle lane approaches to the junction be coloured. This approach should be considered in line with the approach to colouring of cycle facilities adopted elsewhere in a local area. See Chapter 9.
5. Where mandatory and advisory cycle lanes have been shown, the prescribed upright signs to accompany the road marking have been omitted for clarity.
6. Where a cycle lane is only provided on the approach to the Advanced Stop Line it should extend for the distance that traffic queues on that approach to the junction.
7. Mandatory cycle lanes are preferable on the approach to the Advanced Stop Line, however there may be circumstances where occasional encroachment by motor vehicles is unavoidable in which case an advisory cycle lane can be provided. It is desirable that waiting and loading restrictions are provided in conjunction with the advisory cycle lane where parked vehicles would otherwise be anticipated to block the lane.
8. See Figure 5.13, note 6, for Central Advisory Lane approach to Advanced Stop Lines and Figure 5.15 for Staggered Stop Lines.

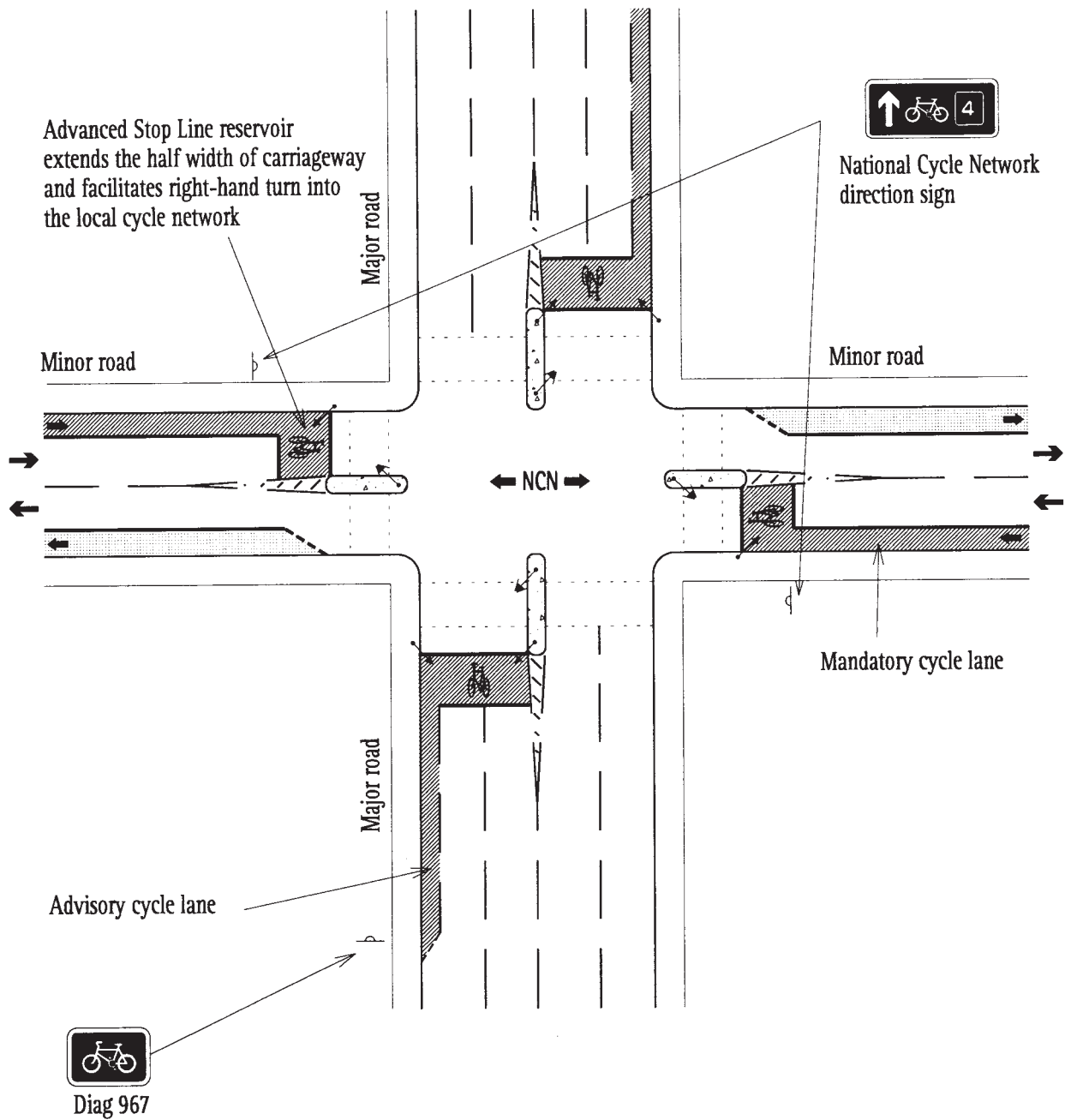
References

1. Traffic Advisory Leaflet 8/93: Advanced Stop Lines for Cyclists
2. Traffic Advisory Leaflet 5/96: Further Development of Advanced Stop Lines
3. Local Transport Note 1/86: Cyclists at Road Crossings and Junctions (S)

Examples

1. NEWCASTLE UPON TYNE: Hunters Road/Brighton Grove crossings, Portland Road/Barrack Road
(Newcastle Upon Tyne City Council)
2. BRISTOL: Whiteladies Road/Tyndall's Park Road
(Avon County Council)
3. LONDON: Albion Gate entrance to Hyde Park
crossing Bayswater Road
(Westminster City Council)
4. BRADFORD: Manningham Lane/Queens Road
(Bradford City Council)
5. YORK: Queens Street/Blossom Street
(York City Council)
6. CAMBRIDGE: Devonshire Road/Tenison Road
(Cambridgeshire County Council)

Minor Road Crossing Major Road at Signalised Junction – Figure 5.12



Staggered Minor Road Crossing Major Road at Signalised Junction - Figure 5.13

Notes

1. Increased prominence of crossings or additional route guidance for cyclists may be necessary. Discussion with Sustrans and the DOT to determine an appropriate solution is encouraged. The application of "Elephant Footprints" (Ref WBM 294) may be suitable in some circumstances, in which case, special authorisation from the DOT will be required.
2. "Elephant Footprints" are unlikely to be authorised where speeds are expected to exceed 30mph, except where cyclists are under signal protection.
3. Where carriageway width permits, it is advantageous to provide a central refuge. This will benefit both cyclist and pedestrian safety.
4. It is recommended that Advanced Stop Line reservoirs and cycle lane approaches to the junction be coloured. This approach should be considered in line with the approach to colouring of cycle lanes adopted elsewhere in a local area.
5. The most common method of tactile segregation is by using a raised white line delineator (Diag No. 1049. 1) combined with tactile paving. The use of a 50mm upstand may be appropriate in certain locations on the National Cycle Network to suit local conditions or where it is considered that this omission will be particularly detrimental to the partially sighted.
6. A central advisory lane has been found to be an advantage to right turning cyclists as against a nearside approach lane where vehicle flows are greater than 200-300 vehicles per lane per hour, particularly where there is a heavy cycle right turn and a heavy straight ahead motor vehicle flow with two lanes. A central advisory lane is also an advantage for straight ahead cycle movements when there is a nearside left turn lane.

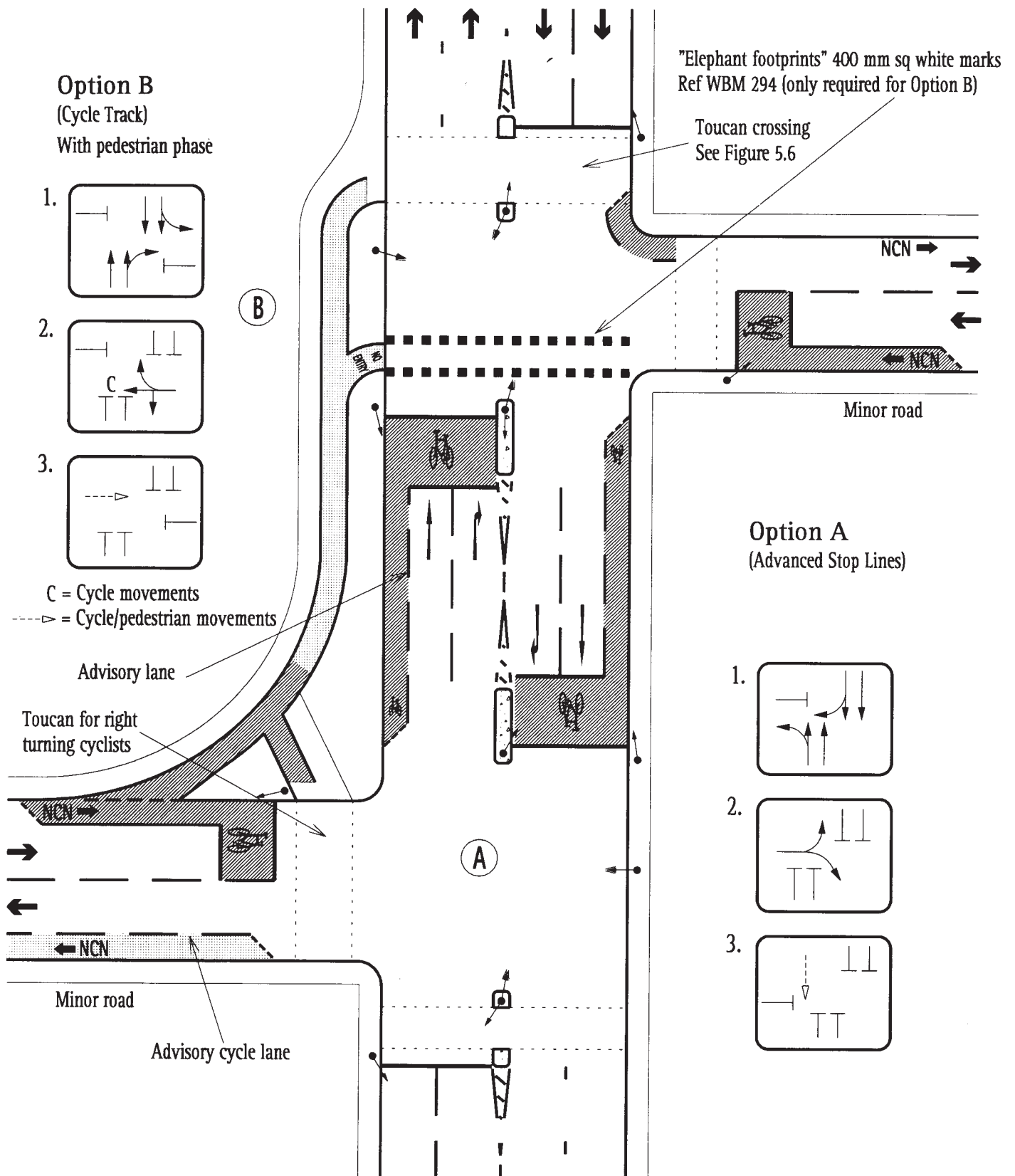
References

1. Traffic Advisory Leaflet 8/93
Advanced Stop Lines for Cyclists
2. Local Transport Note 1/86
Cyclists at Road Crossings and Junctions (S)
3. Traffic Advisory Leaflet 4/90
Tactile Markings for Segregated Shared Use by Cyclists and Pedestrians
4. Traffic Advisory Leaflet 5/96
Further Development of Advanced Stop Lines

Examples

1. NOTTINGHAM: Robin Hood Way/Queens Drive
(Nottinghamshire County Council)
2. HILLINGDON: Central Ave to Shakespeare Ave
crossing Uxbridge Road
(London Borough of Hillingdon)
3. CAMBRIDGE: Hills Road
(Cambridgeshire County Council)
4. OXFORD: High Street/Longwall Street, central
advisory lane
(Oxfordshire County Council)

Staggered Minor Road Crossing Major Road at Signalised Junction – Figure 5.13



The above detail shows two options. The choice of option will be dependent on available space, land and traffic flows

Two-Way 900 Turn at Signalised Junction - Figure 5.14

Notes

1. This drawing shows provision for cyclists on the National Cycle Network; cyclists approaching from the north can be catered for by providing Advanced Stop Lines if considered necessary. See Figure 5. 12.
2. Detail implies a minimum road width of 10.2m to incorporate two-way vehicle flow, cycle lane and island, if standard lane widths of 3.65m are used.
3. The needs of pedestrians will need to be considered and taken into account in any design and a pedestrian stage may be required. Where pedestrian studs are provided across the cycle route, measures should be included to advise pedestrians that the cycle route is two directional.
4. Appropriate staging for the cycle movements from the south and east will need to be determined with reference to the expected cycle volumes and turning movements. These phases will need to run separately from the all vehicle phases to provide safe passage for cyclists.
5. Increased prominence of crossings and additional route guidance for cyclists may be necessary. Discussion with Sustrans and the DfT to determine an appropriate solution is encouraged. The application of "Elephant Footprints" (Ref WBM 294) may be suitable in some circumstances, in which case, special authorisation from the DfT will be required.
6. "Elephant Footprints" are unlikely to be authorised where speeds are **expected to exceed 30mph**, except where cyclists are under signal protection.
7. It is recommended that the cycle track approaches to the junction be coloured. This approach should be considered in line with the approach to colouring of cycle lanes adopted elsewhere in a local area. See Chapter 9.
8. Where separate signalisation is provided for cyclists it is important to site all signal heads carefully to avoid confusion to either cyclists or motorists.
9. A width of 1.2m is sufficient to allow access for the largest types of cycle currently used by people with disabilities.

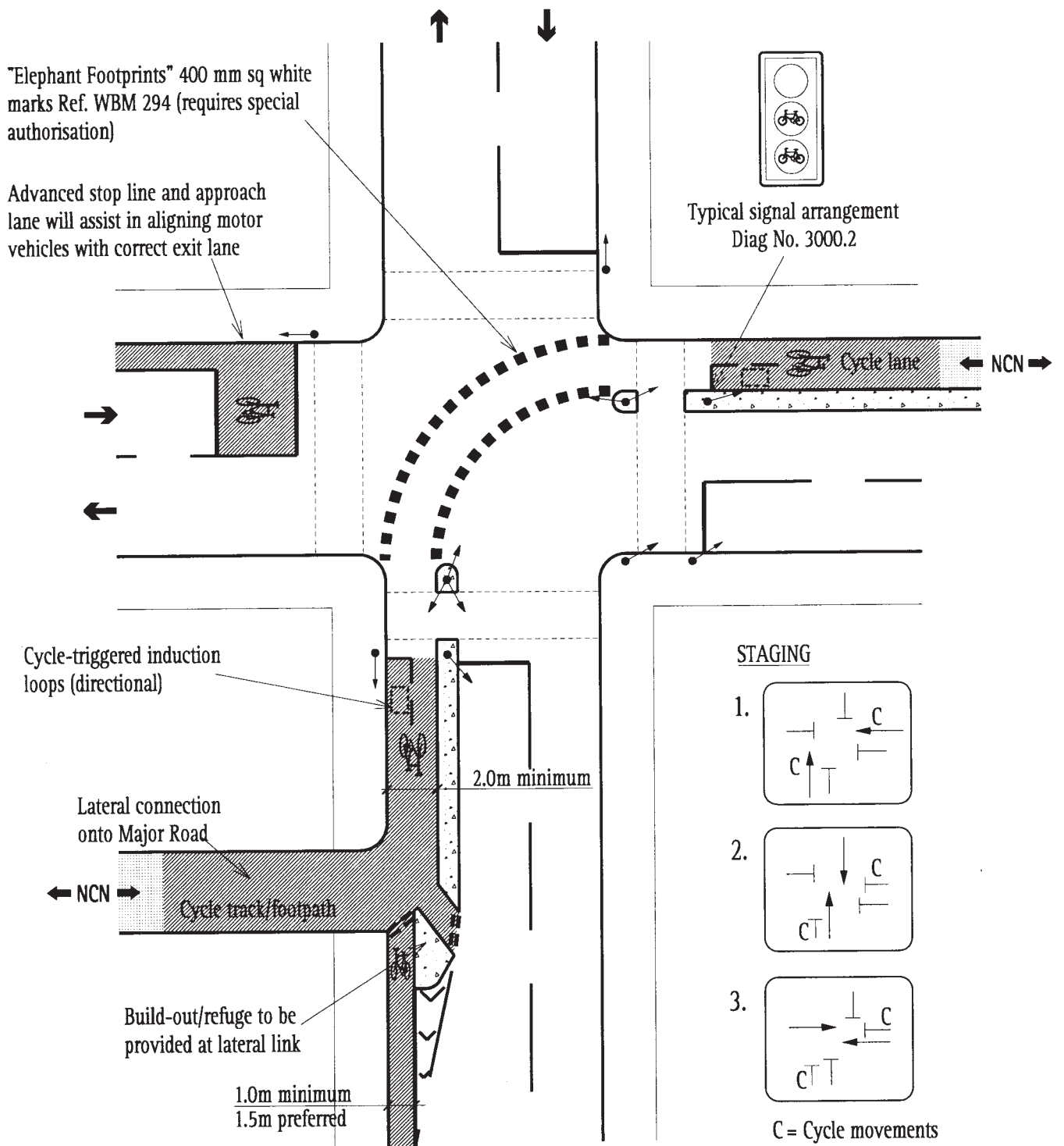
References

1. Local Transport Note 1/86: Cyclists at Road Crossings and Junctions (S)
2. Traffic Advisory Leaflet 6/87 Innovative Cycle Scheme, London, Albert Gate/Albion Gate
3. Traffic Advisory Leaflet 6/86: Innovative Cycle Scheme, Cambridge,

Examples

1. CAMBRIDGE: Hills Road
(Cambridgeshire County Council)
2. BEDFORD: Brickhill Drive/Larkway Signals
(Bedfordshire County Council)
3. NOTTINGHAM: Canal Street/Carrington Street
(Nottingham County Council)

Two-Way 90° Turn at Signalised Junction – Figure 5.14



Cycle Bypass at Signalised Junction - Figure 5.15

Notes

1. Advanced stop lines have proved successful for flows one way up to 1000 vehicles per hour and with three lane approaches. However, on the National Cycle Network they will normally be appropriate for rightturning cyclists on approaches with one or two lanes.
2. The left bypass cycle lane can also be used at an unsignalised junction and at a junction where the left turn is prohibited. In the latter case it may be necessary for the TRO to exempt cyclists.
3. It is recommended that the surface of the cycle lane approaches to the junction be coloured. This approach should be considered in line with the approach to colouring of cycle lanes adopted elsewhere in a local area. See Chapter 9.
4. The needs of pedestrians will need to be considered and addressed in any design. In particular, the bypass arrangement providing the straight ahead movement should be used with care, and should take account of the level of pedestrian crossing demand and the number and speed of cyclists.

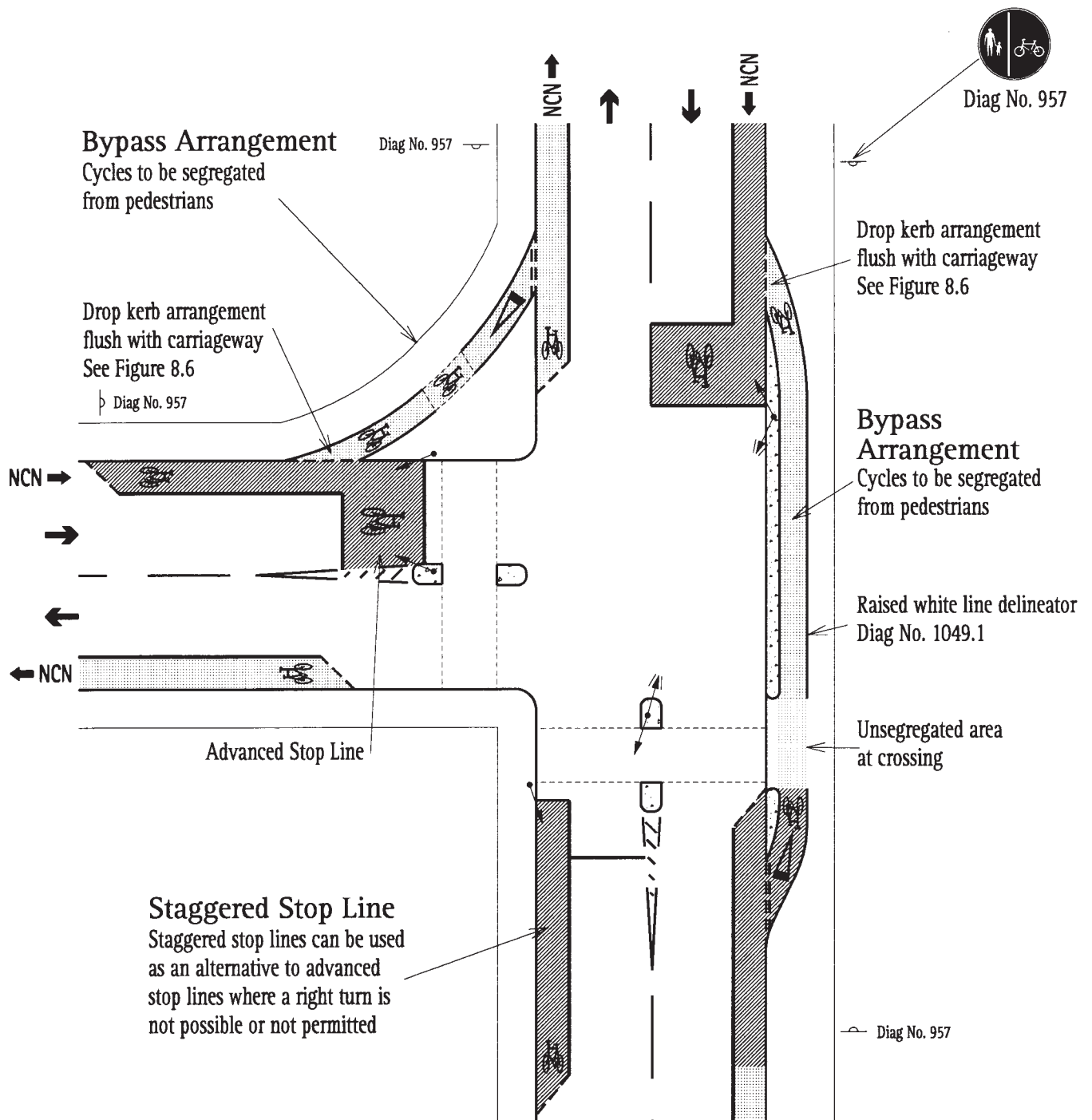
References

1. Traffic Advisory Leaflet 8/93: Advanced Stop Lines for Cyclists
2. Local Transport Note 1/86: Cyclists at Road Crossings and Junctions (S)
3. Traffic Advisory Leaflet 5/96: Further Development of Advanced Stop Lines

Examples

1. OXFORD: High Street/Longwall Street
(Oxfordshire County Council)
2. OXFORD: Headington Road/Gipsy Lane
(Oxfordshire County Council)
3. CAMBRIDGE: Hills Road
(Cambridgeshire County Council)

Cycle Bypass at Signalised Junction – Figure 5.15



Note: An alternative to the advanced stop line shown above is the segregated signalised cycle lane. See Figure 5.14

Roundabout - Figure 5.16

Notes

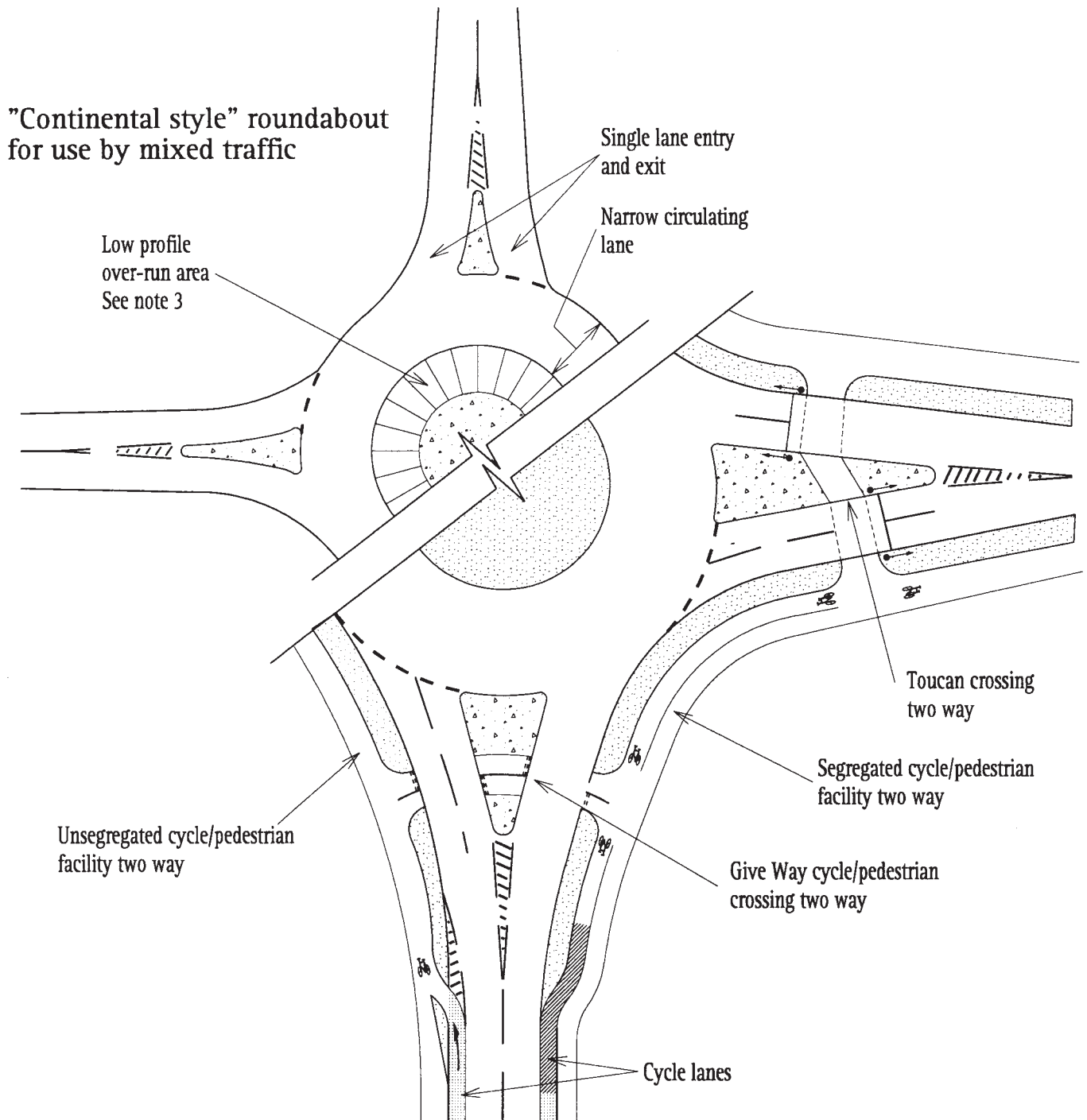
1. The "continental style" roundabout with single lane approaches and narrow circulating carriageway has a vehicle capacity of up to 3,000 vehicles per hour. This type of roundabout complies with the recommendations of TD 16/93.
2. At roundabouts that cannot be adapted to the "continental style" or, with traffic flows greater than 3,000 vehicles per hour and no signals, a segregated cycle track is recommended on the National Cycle Network. Signalisation of a heavily trafficked or fast roundabout can assist cyclists crossing the entries/exits.
3. The dimensions for the "continental style" roundabout are: inscribed circle diameter 28-36m; circulatory carriageway width 4-6m; entry/exit widths 4-5m with radial (perpendicular) approach arms. The low profile over-run area should be formed in setts or other textured surface material. It should be clearly visible. The size of the over-run area will be dependent upon the size of the design vehicle for the roundabout.
4. The aspects of roundabout design which make the "continental style" roundabout safer for cyclists than the typical UK roundabout are: reduced entry width (preferably single lane) reduced circulating width (preferably single lane) and increased angle of entry. Greater emphasis in design is placed on speed reduction.
5. It is recommended that the segregated cycle track facility at a roundabout be two way where there is a significant right turn element to the cycle flows.
6. The crossing area within the deflection island should conform to the **requirements of Figure 5.8**.
7. At Give Way cycle crossing points, it is recommended that the entry be no more than two lanes wide, whilst the exit be kept to a single lane.
8. See Figure 5.6 for details of Toucan crossing.

References

1. TD 16/93 Geometric Design of Roundabouts.
2. Cyclists and Roundabouts 1991 Et 1993 update CTC
3. Sign Up for the Bike - CROW 1993
4. Local Transport Note 1/86: Cyclists at Road Crossings and Junctions (S)
5. Traffic Advisory Leaflet 12/93 Over-Run Areas

Examples

1. SOUTHAMPTON: Millbrook roundabout unsegregated pedestrian/cycle path (Hampshire County Council)
2. BRISTOL: Emersons Green, reduced entry and exit widths at cycle track crossing (Avon County Council)



Roundabout with
segregated cycle track

Bridge - Figure 5.17

Notes

1. Every proposal to convert an existing footbridge to shared use must be assessed on its local merits. The physical design and current usage must be considered alongside the quality of alternative routes available.
2. New and existing grade separated crossings should make use of natural topography to minimise the amount of level change along the route.
3. High quality lighting and measures to enhance the feeling of security for cyclists and pedestrians should be considered.
4. Approach gradients should not exceed 1:20 unless this results in significant out of line travel. Steep gradients may require separation of pedestrians and cyclists and barriers at the lower end of gradients.
5. Design should ensure that pedestrians and people with disabilities can use the facility.
6. Conversion of bridges to shared use may require raising the height of the handrail by extension or replacement.
7. Existing road bridges could be adapted by incorporating a cycle track within the footway. The minimum widths given for an unsegregated cycle track/footway are only acceptable where there is a low pedestrian flow.

Wheeling Ramps

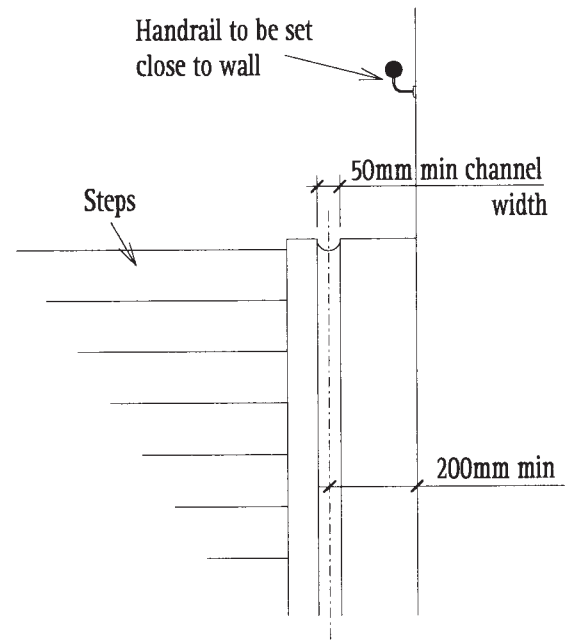
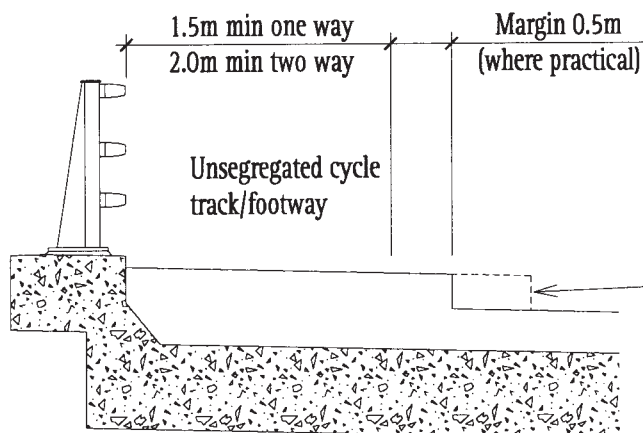
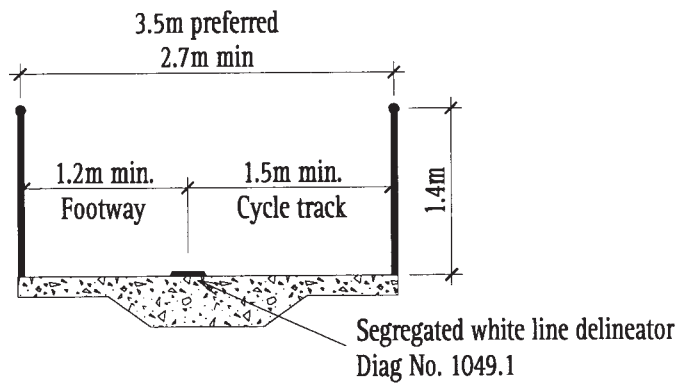
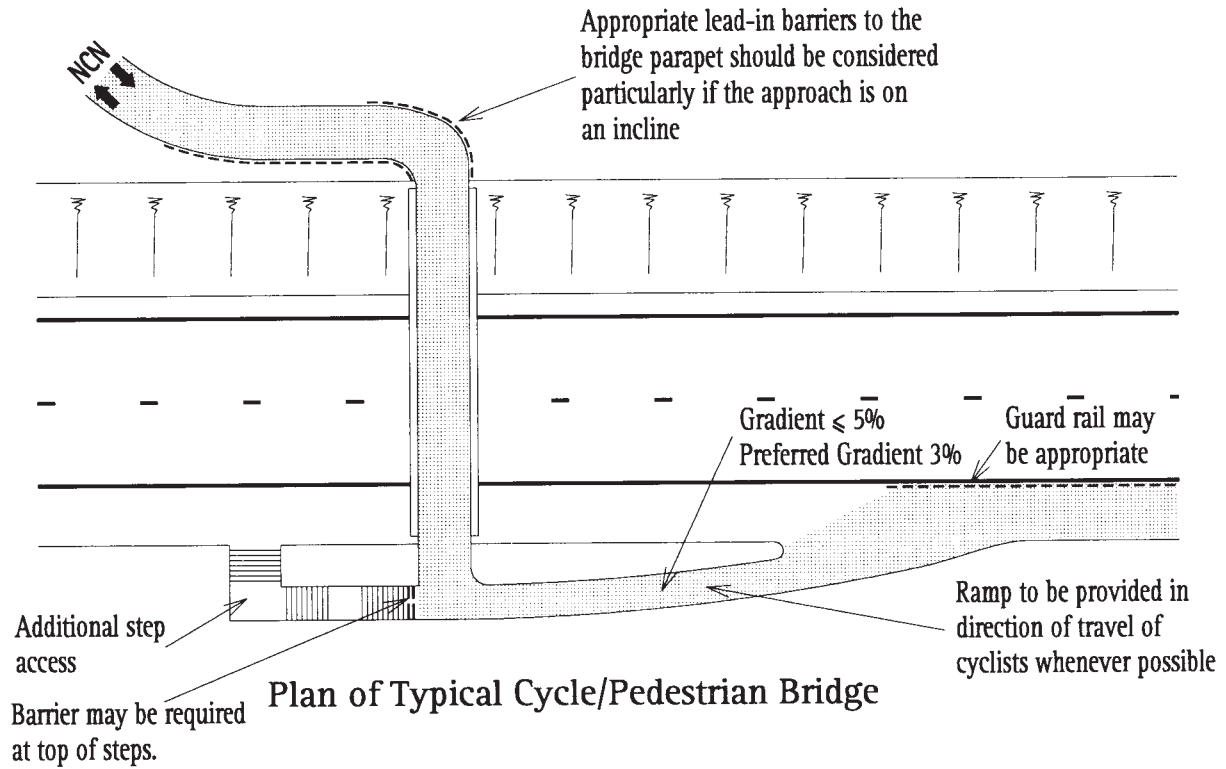
8. The gradient of the steps should preferably not be greater than 26.50, this being the maximum specified for footbridges. This is important for two reasons. Firstly, because of the difficulty of pushing or holding back a bicycle steep gradients. Secondly, the need for the front chainring to clear the top step.
9. A handrail without an associated wheeling ramp should be available to pedestrians. Where a staircase makes a significant turn the wheeling ramp should be provided on the outside of the turn. The wheeling ramp can be formed in concrete, steel channel or hardwood.
10. Wheeling ramps can usefully be provided at locations where alternative provision in the form of ramps is not viable e.g., railway stations for access to platforms.

References

1. BD52/93: The Design of Highway Bridge Parapets
2. BD29/87: Design Criteria for Footbridges
3. Sign Up for the Bike - CROW 1993

Examples

1. BRISTOL: Great Stoke Way, Stoke Gifford
(Avon County Council)
2. BRISTOL: Cumberland Road
(Avon County Council)



Where there is insufficient width for the cycle track/footway consideration should be given to reducing carriageway lane widths in order to widen the cycle track/footway

Underpass/Subway - Figure 5.18

Notes

1. Every proposal to convert an existing subway to shared use must be assessed on its local merits. The physical design and current usage must be considered alongside the quality of alternative routes available.
2. The perceived security of pedestrians and cyclists using the subway can be improved by good visibility, lighting and flared approaches.
3. New and existing grade separated crossings should make use of natural topography to limit the amount of level change along the route and to maximise natural lighting. The approach and alignment through a subway should be open to give as much visibility and natural light as possible. Where space is available, opportunities should be taken to improve visibility, such as realigning approaches to give a straight through route or to remove zig-zag ramps.
4. The need to slow cyclists down on steep ramps and encourage them to keep to their own part of the subway is important. Cyclists should be able to negotiate any barriers without having to dismount.
5. The gradient of access ramps should be shallower than 3% and should not normally exceed 5%. If space is very restricted a gradient of up to 7% may be used if provided with staggered barriers to encourage cyclists to exercise greater care.
6. Any proposal for shared use of a subway will involve extensive consultation and a change in legal status to a cycle track.
7. Conversion of an existing **subway must ensure that pedestrians, particularly disabled, blind and partially sighted people** are not put at risk. Tactile paving to assist visually impaired people may be required.

References

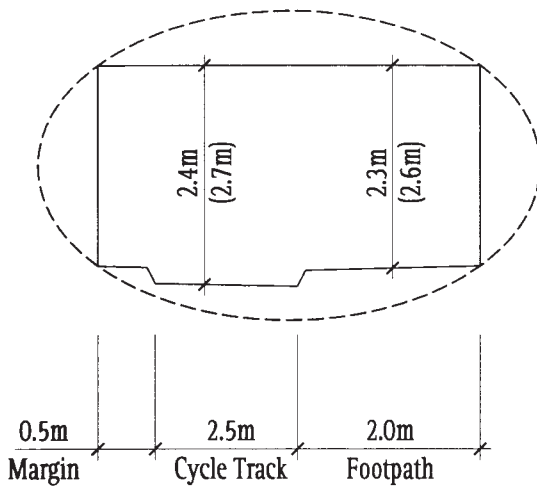
1. Design Manual for Roads and Bridges (DOT) Volume 6, Section 3, Part 1. TD36/93 Subways for Pedestrians and Pedal Cyclists Layout and Dimensions
2. Local Transport Note 1/86: Cyclists at Road Crossings and Junctions (S)
3. Traffic Advisory Leaflet 4/90: Tactile Markings for Segregated Shared Use by Cyclists and Pedestrians
4. Traffic Advisory Leaflet 9/86: Innovative Cycle Scheme, Canterbury Rheims Way Cycle and Pedestrian Subway
5. Traffic Advisory Leaflet 11/86: Innovative Cycle Scheme, Chelmsford Central Park Subway Conversion to Shared Use

Examples

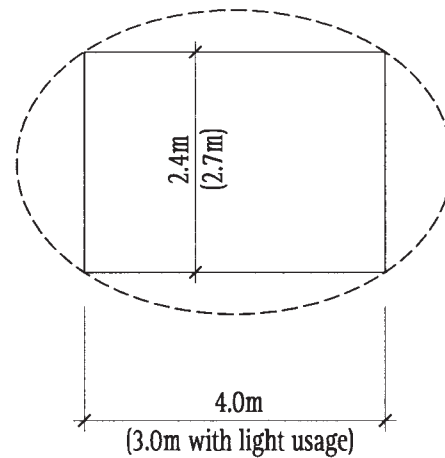
1. SOUTHAMPTON: Western Approach Cycle Route under Redbridge Road
(Hampshire County Council)
2. BURY: Middleton Road/M66
(Greater Manchester Council)
3. STEVENAGE: Integral part of Newtown design
(Hertfordshire County Council)

New Subway

Typical Section (Segregated)



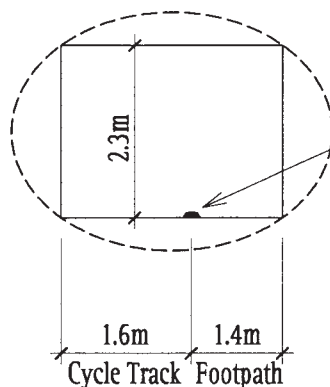
Typical Section (Unsegregated)



Dimensions shown are minimum recommended for new subways
 Dimensions in brackets apply to subway lengths > 23m
 Broken lines illustrate additional space provided using elliptical culverts

Existing Subway Conversion

Typical Section



Raised white line delineator
 Diag No. 1049.1

Dimensions shown on section
 are typical for urban subways

Form of Segregation Appropriate to Various Widths of Existing Subways

Form of Segregation	Suggested Widths (metres)		
	<2.7m	2.7m - 3.5m	>3.5m
Unsegregated	Yes	Yes	Yes
Segregated white line	No	Yes	Yes
Segregated by kerb, level or barrier	No	No	Yes

Chapter 6 - Traffic Calming

The object of traffic calming is to modify driver behaviour, control vehicle speeds and, in some circumstances, to reduce the volume of traffic. This reduces danger from traffic and can enable local residents, including children, to reclaim the streets as social places where walking and cycling can flourish. Research by Transport Research Laboratory into traffic calming measures in 20mph zones confirms their effectiveness; accidents involving child pedestrians or cyclists fell by 67%, and there was a 6.2% reduction in accidents for each 1mph reduction in speed. The National Cycle Network will make use of existing traffic calmed areas, extend them, and act as a catalyst for introducing new measures. It will often be desirable to introduce area traffic calming rather than measures confined to specific cycle routes.

It is essential that the calming measures do not create conditions which are dangerous or unpleasant for cyclists. The details of design and construction are most important. In particular, cyclists should not be directed over sudden changes in level or uneven surfaces or forced into the line of motor vehicles, at road narrowings or chicanes. Particular attention should be paid to drainage details to ensure a clear and safe path for cycling. The general solutions indicated on the following sheets include cycle bypasses through calming features. Due to their restricted width, a high standard of reinstatement is essential when any works are undertaken within a cycle bypass.

A variety of traffic calming techniques have been developed. Some have been found to improve perceived and actual safety for cyclists.

Others have been found to be intimidating for cyclists (although the accident implications are not clear cut). Features which intimidate are likely to discourage cycling and should not be implemented on the National Cycle Network. The selection of traffic calming features will also need to take account of the effects on buses and emergency vehicles, and the noise experienced by residents.

A 'menu' of urban traffic calming features is listed below with general comments as to their applicability to the National Cycle Network. These features can and should be used in combination. Greater detail on design considerations is given in Figures 6.1 and 6.2.

Road Humps

It is most important that there is a smooth transition from carriageway surface to the ramp face, with no upstand. Sinusoidal profile humps can be used, and experience to date indicates they can be valuable in improving conditions for cyclists. Otherwise road humps with cycle bypasses are preferred. Long sequences of standard profile round top or flat top road humps can create discomfort for cyclists, more so with the latter. See Figure 6.1.

Speed Cushions

Speed cushions are appropriate for use on cycle routes. As with road humps, transition should be gradual with no upstands. See Figure 6.1.

Priority Systems

Single build-outs or pinch points with cycle bypasses are appropriate for use on cycle routes. Chicanes with priority systems are normally not appropriate unless a protected cycle route can be provided throughout. See Figure 6.2.

Central Islands

These are not appropriate on cycle routes unless they are used in conjunction with speed reducing features, or there is a particular pedestrian crossing movement, or cycle bypasses can be provided. See Figure 6.2.

Kerb Extensions/Build-Outs

These have been found to create similar, if not greater, problems to those associated with central islands, and again should not be employed on the National Cycle Network as free standing features unless one or more of the conditions listed under 'Central Islands', can be met. Where a cycle bypass is not provided, the taper of a build-out should be gradual so that cyclists are not suddenly forced to deflect from their path. Build-outs can assist in providing a taper movement on the approach to on street parking. See General Notes Figure 2.1.

Mini Roundabouts

Appropriate for certain locations on the National Cycle Network subject to certain design criteria being met, see Chapter 5. Mini roundabouts will normally be used in conjunction with other traffic calming measures.

Entry Treatments

Appropriate subject to careful design. Where these involve road narrowings, care should be taken to ensure that cyclists are not 'pinched' or suddenly forced to deflect from their path.

Thumps

These are of limited value in terms of traffic calming and normally not recommended on the National Cycle Network. They are uncomfortable for cyclists.

Rumble Strips

If this type of measure is used then it is recommended that a minimum 1m gap is provided for cyclists.

Optical Width Measures

Gateways, tree planting etc. are desirable if provided in conjunction with other appropriate measures.

Overrun Areas on Corners

These are appropriate if flush with the carriageway and constructed from smooth textured materials. (NB **Overrun** area on the central islands of a roundabout should be proud: see Figure 5.16).

Rural Traffic Calming

The issue of traffic calming in rural areas is discussed more fully in Chapter 7. In rural areas road closures and access restrictions together with measures to limit speeds are the preferred method of creating routes suitable for the National Cycle Network. Rumble strips and optical width measures will be useful on busier sections of rural road shared with or crossed by the National Cycle Network. In village situations priority systems, entry treatments and optical width measures are the most suitable traffic calming details.

Environmental Improvement

There are unfortunately many examples of traffic calming schemes which are disruptive to the street scene due to unsympathetic use of materials, signing, and poor detailing. This can be a particular problem in rural areas, where the entry into villages can be marred by inappropriate signs and poor detailing.

An objective of traffic calming schemes forming part of the National Cycle Network should be to improve the street environment, making it more attractive so that all users can easily recognise that the shift in priority away from motor traffic is a benefit rather than a restriction. This can be achieved through specification of high quality materials, minimising the use of signs, simplicity of design, use of high quality street furniture and planting schemes. If possible, an urban design or landscape input should be sought.

Road Humps/Speed Cushions - Figure 6.1

Notes

1. Where parked vehicles would otherwise be anticipated to block the gap for cyclists, this can be avoided by use of build-outs, parking restrictions or a mandatory cycle lane. If a mandatory cycle lane is not used then an advisory cycle lane is recommended.
2. The recommended maximum spacing between road humps is 100m and between speed cushions is 60m to keep the "between humps" vehicle speed below 25mph. It is important that there is a smooth transition from carriageway surface to ramp face on road humps and speed cushions, with no upstand.

Speed Cushions

3. On bus routes the width of the speed cushion will be reduced to 1.6 - 1.7m. Speed cushions have considerable advantages over road humps for buses.
4. The recommended maximum gradient on the sides of the speed cushion is 1:5, the maximum gradient for the "on/off" slopes is 1:8. The recommended height for speed cushions is 75mm when constructed in-situ or 65mm on narrower cushions. The recommended length is 2.0 - 3.0m but this can be increased to 3.7m when the road is a mini-bus route.

Road Humps

5. The maximum height for road humps is 100mm but 75mm is recommended by the DOT. The recommended gradient for the "on/off" slope of a flat top road hump/raised junction is 1: 15.
6. Wherever possible bypasses should be provided to improve conditions for cyclists. They may be omitted at occasional road humps in a series where the speed controlling effect of a **road hump** scheme would otherwise be reduced. A width of 1.2m is sufficient to allow for the largest types of cycle currently used by people with disabilities.
7. The sinusoidal road hump has been developed by Edinburgh City Council based on a type of road hump widely used in the Netherlands. They appear to be as effective in reducing vehicle speeds as those of a conventional profile but they are far more comfortable to cycle over. The sinusoidal road humps in Edinburgh were constructed by a DLO team without special training or instruction and were completed satisfactorily at no additional cost.

References

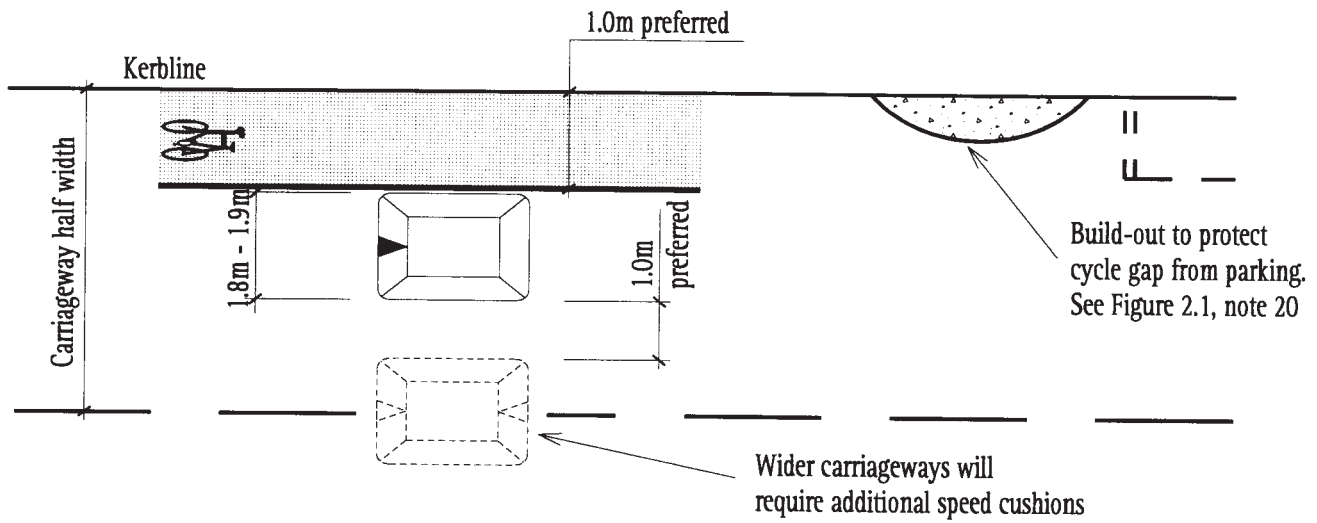
1. Traffic Advisory Leaflet 7/96: Highway (Road Humps) Regulations 1996 (S)
2. Traffic Advisory Leaflet 4/94: Speed Cushions
3. Traffic Advisory Leaflet 6/96: Traffic Calming: Traffic and Vehicle Noise
4. Traffic Advisory Leaflet /96: 75mm High Road Humps
5. Highways (Road Humps) Regulations 1996 (SI 1996 No. 1483) (S)
6. Traffic Advisory Leaflet 2/94: Entry Treatments

Examples

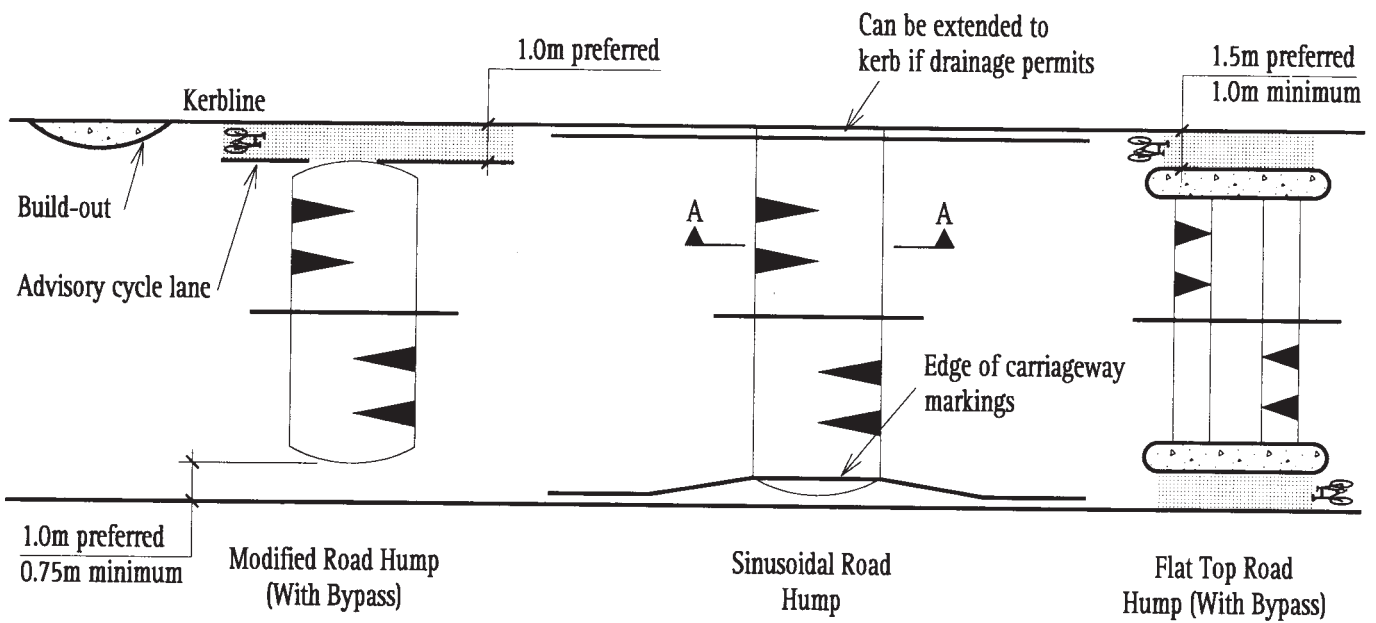
EDINBURGH: Grange residential area
(Edinburgh City Council)

2. **BIRMINGHAM:** Valentine Road etc, Kings Heath
(Birmingham City Council)
3. **BRADFORD:** Scotsman Road
(Bradford City Council)

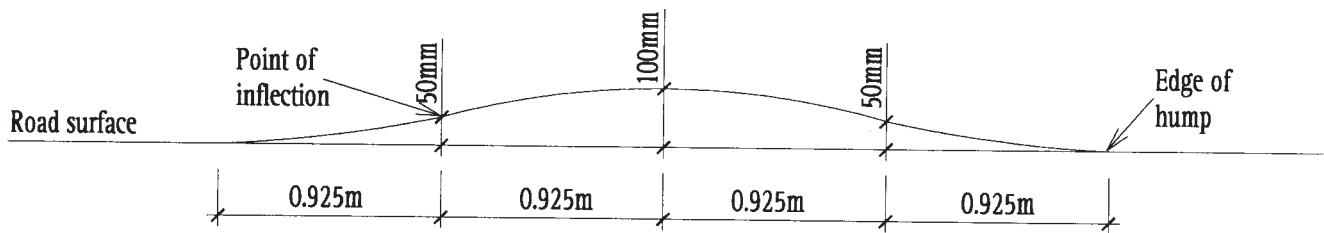
Road Humps/Speed Cushions - Figure 6.1



Speed Cushion Plan



Road Humps Plan



Sinusoidal Road Hump With Tapered Edges - Cross Section A - A

Road Narrowings - Figure 6.2

Notes

1. The approaches to and exits from bypasses of road narrowings should ideally be protected from parked vehicles within 20m. Figure 6. 1, note 1.

Priority System

2. Provide alternating priority for vehicles where a number of narrowings are proposed, except on a gradient when priority may be given to the uphill direction.
3. Ensure that the gap provided for cyclists allows for growth of any adjacent vegetation (particularly important in rural and semi-rural locations).
4. The Highways (Traffic Calming) Regulations 1993 allow warning signs to be omitted where horizontal deflections are used in 20mph zones. The Traffic Signs Regulations and General Directions 1994 allow the "Give Way" markings to be used on their own or in conjunction with the priority signs.

Central Island

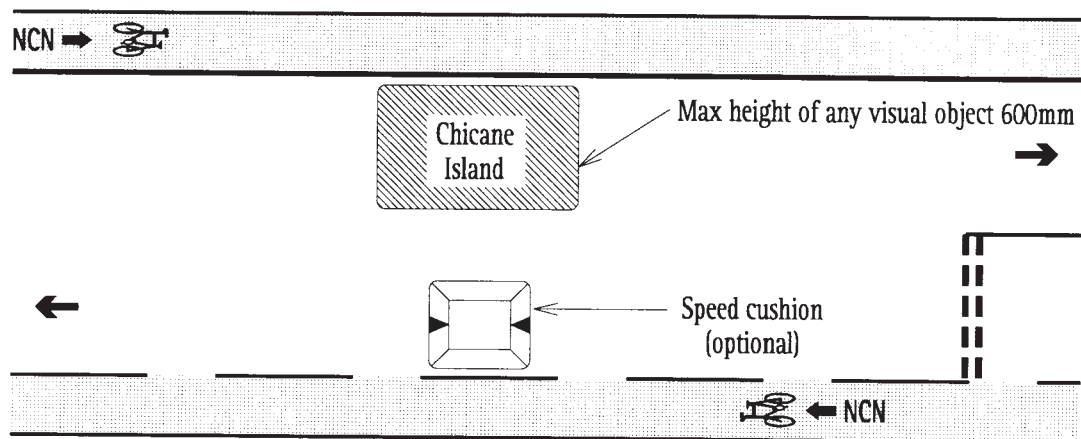
5. It is recommended that central islands only be used to cater for particular pedestrian crossing movements.
6. Where the 85 percentile speed of motor vehicles is less than 30 mph and the vehicle flow is light then a maximum carriageway width of 3.0m is recommended. Where the motor vehicle speed is greater than 30mph and/or where wide vehicles are common then the minimum carriageway width shall be 4.5m.
7. The speed reducing effect of traffic islands (unless leaving carriageway width <3.0m) is usually only slight. Other features such as speed cushions and road humps should be considered in order to reduce speed.
8. Where a refuge is provided on a hill, narrowing the gap downhill can assist uphill cyclists by increasing the width available.

References

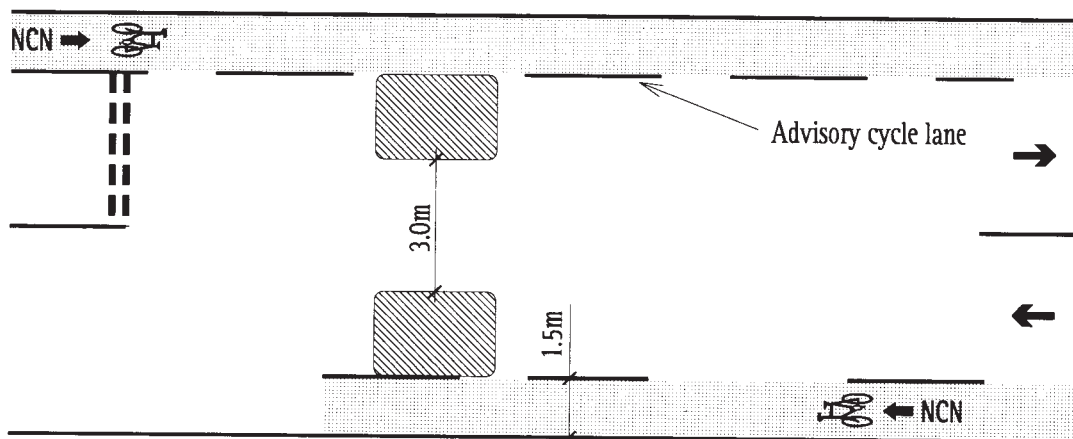
1. Traffic Advisory Leaflet 9/94 Horizontal Deflections Traffic Advisory Leaflet 7/95 Traffic Islands for Speed Control
3. Traffic Advisory Leaflet 7/93 Traffic Calming Regulations (S)
4. Traffic Advisory Leaflet 3/93 Traffic Calming Special Authorisation
5. Highway (Traffic Calming) Regulations 1993 (SI 1993 No. 1849) (S)
6. Traffic Advisory Leaflet 1/97 Cyclists at Road Narrowings
- 2.

Examples

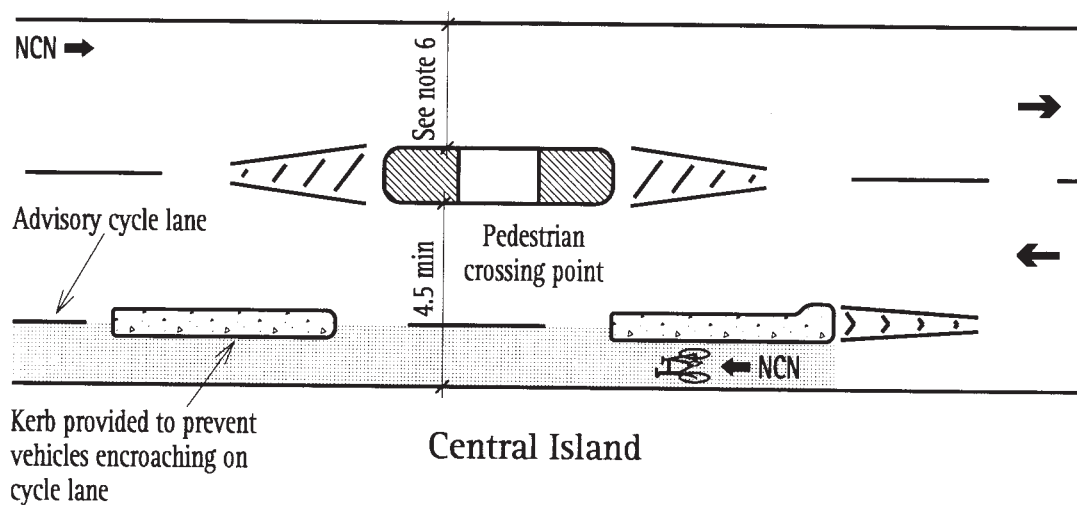
1. BATH: The Hollow Cycle bypass at priority system (Avon County Council)
2. NOTTINGHAM: Cricketfield Road Central island with speed cushion (Nottingham County Council)
3. WOKINGHAM: Rose Street Offset central refuge (Berkshire County Council)
4. WANDSWORTH: Burntwood Lane Protected cycle lane at chicane (London Borough of Wandsworth)



Priority System - Single Chicane



Priority System - Pinch Point



Minor Road Closure - Figure 6.3

Notes

1. The central island closure device will be designed subject to the needs of emergency vehicle access, pedestrian flows and environmental considerations. A single central gap for cycle movements would be an alternative layout.
2. A Traffic Regulation Order is required to prohibit motor vehicle traffic from the closed section of the road.
3. Where carriageway width permits, it may be advantageous to provide a central refuge. A central refuge is likely to be necessary with vehicle flows greater than 6000 vpd.
4. A width of 1.2m is sufficient to allow access for the largest types of cycle currently used by people with disabilities.

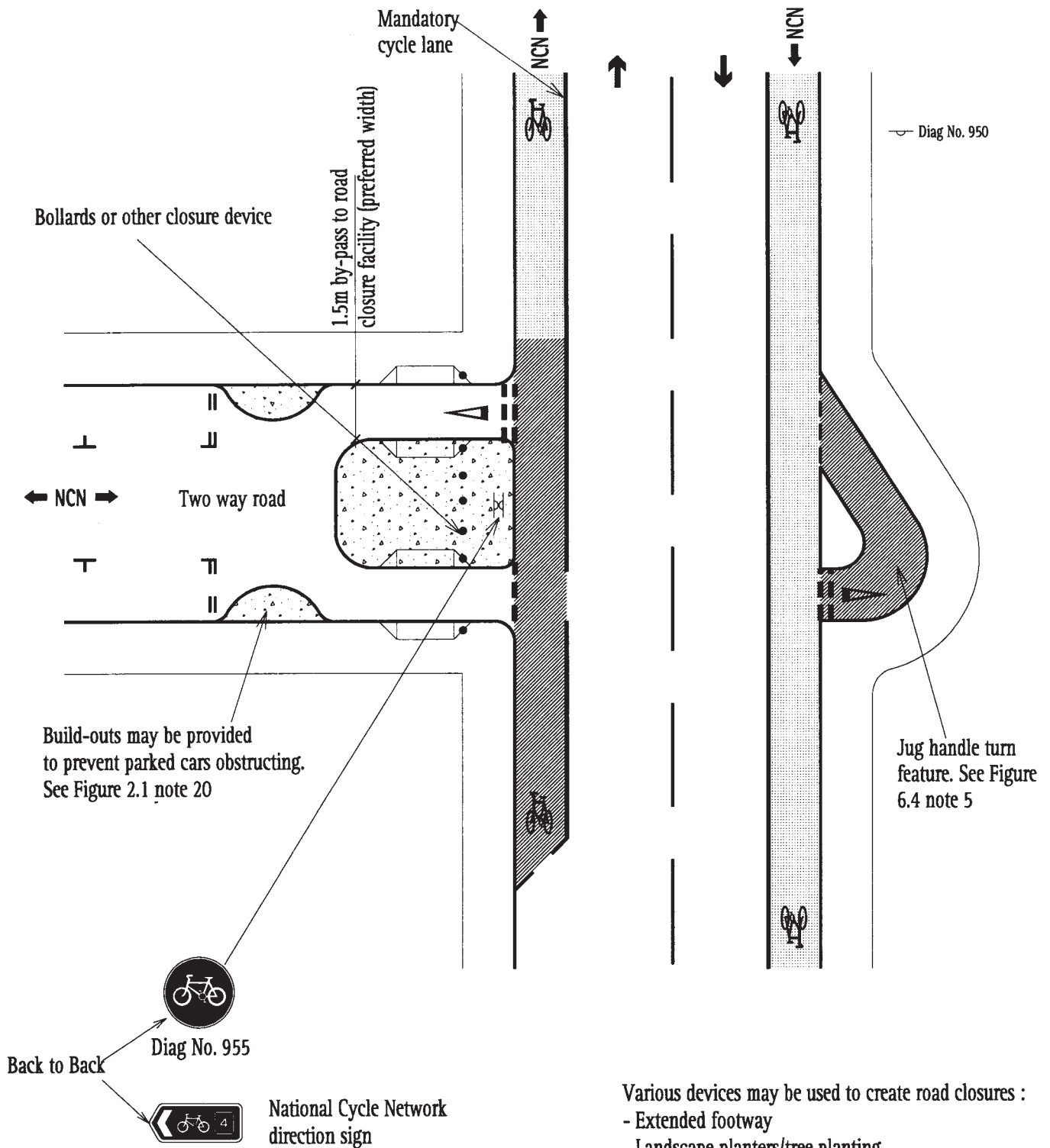
References

1. Traffic Advisory Leaflet 1/87: Measures to Control Traffic for the Benefit of Residents, Pedestrians and Cyclists
2. Local Transport Note 1/86 Cyclists at Road Crossings and Junctions (S)
3. The Highways (Traffic Calming) Regulations 1993
(SI 1993 No. 1849) (S)
4. Traffic Advisory Leaflet 9/89: The South-East Cambridge Cycle Route

Examples

1. YORK: Waterend/Salisbury Road
(York City Council)
2. CAMBRIDGE: Lyndewode Street/Tenison Road
(Cambridgeshire County Council)
4. NOTTINGHAM: Bosford/Cheltenham Street (Nottinghamshire County Council)
5. LONDON: Many examples in Hammersmith (London Borough of Hammersmith Et Fulham)
6. NOTTINGHAM: Springfield Road, New Basford (Nottinghamshire County Council)
7. OXFORD: Holywell Street
(Oxfordshire County Council)
8. CAMBRIDGE: Greville Road/Rustat Road
(Cambridgeshire County Council)

Minor Road Closure – Figure 6.3



Various devices may be used to create road closures :

- Extended footway
- Landscape planters/tree planting
- Permanent and knock down bollards
- Emergency gates
- Walls

False One-Way Streets - Figure 6.4

Notes

1. Where motor vehicle speeds and volumes are sufficiently low, the preferred method of allowing cyclists to travel 'contra-flow' is by creating a false one-way street. This arrangement can avoid the need for parking restrictions or cycle lanes, and is common in other bicycle friendly European countries.
2. False one-way streets restrict motor vehicle access from one direction into an otherwise two-way road. This can be achieved by 'plugging' one end of the street to motor vehicles and providing a bollard and cycle slip (No Entry 'plug' with cycle slip). In England, the Except Cycles exemption plate should not be used with the No Entry sign. The DOT is investigating alternative ways of allowing two-way cycling on roads where motor vehicle access is restricted in one direction, and will issue appropriate advice in due course.
3. A Traffic Regulation Order is required to ban entry to motor vehicles. The order will allow cycles to enter via the cycle gap.
4. Cycle gaps should be at least 1.0m, and preferably 1.5m in width. A width of 1.2m is sufficient to allow passage of the largest type of cycle currently used by people with disabilities.
5. The use of the jug handle turn feature with a central refuge should be considered when the vehicle flow is greater than 6000vpd. With vehicle flows of less than 6000vpd the right turn lane shown in Figure 4.5 should be considered.
6. See Figure 5.8 for further information on the use of the crossing refuge island.

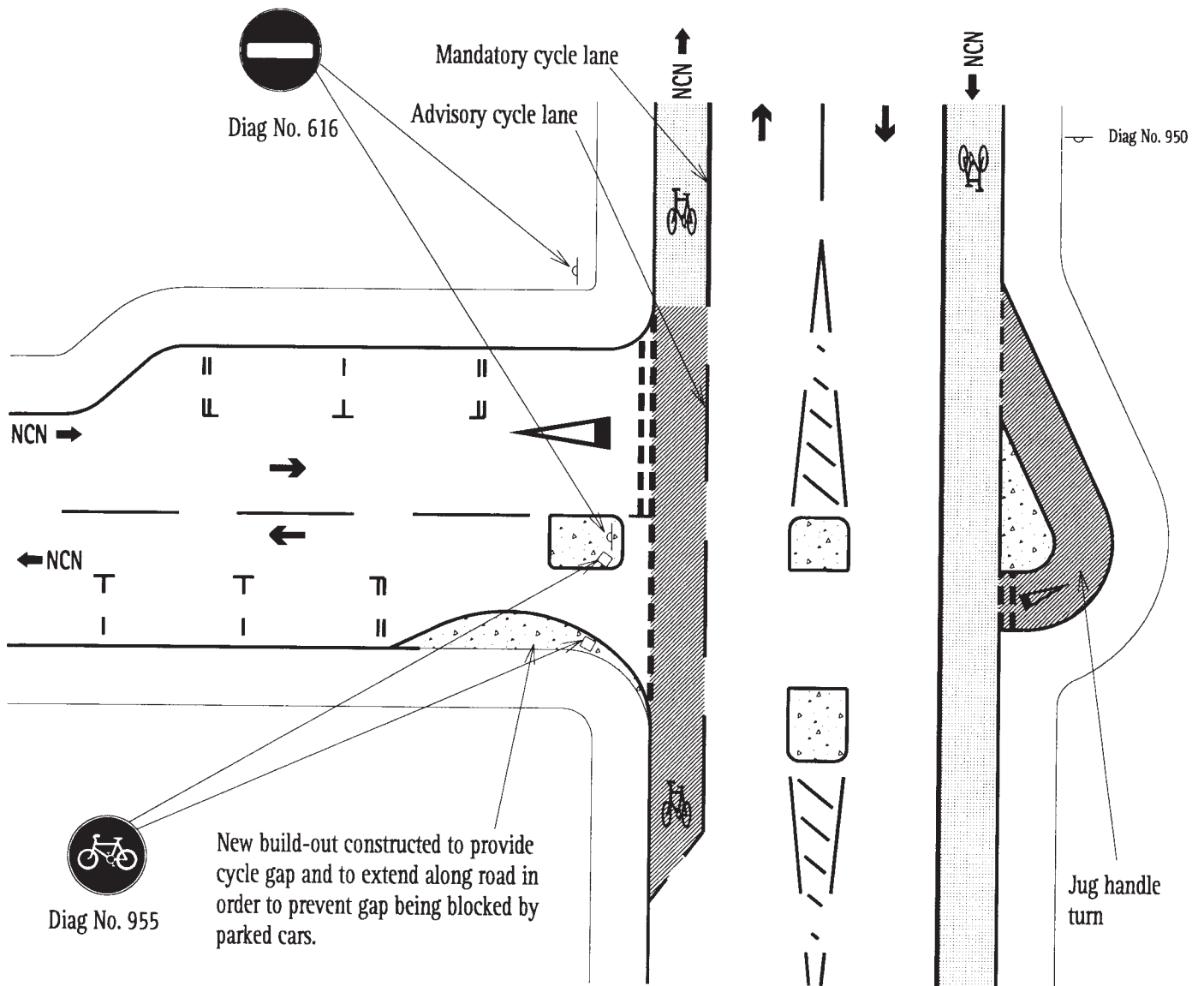
References

1. Traffic Advisory Leaflet 1/87: Measures to Control Traffic for the Benefit of Residents, Pedestrians and Cyclists
2. Transport Advisory Leaflet 8/86: Innovative Cycle Scheme. London - Meymott Street, Southwark. Cycle "Slip" Facility
3. Local Transport Note 1/86: Cyclists at Road Crossings and Junctions (S)

Examples

1. LONDON: Bowling Green Street, Piggindale Road,
(London Borough of Lambeth)
2. NOTTINGHAM: Beeston/City Road
(Nottinghamshire County Council)
3. OXFORD: Little Clarendon Street, Oakthorp Street, Stratfield Road
(Oxfordshire County Council)
4. SOUTHAMPTON: Third Avenue
(Hampshire County Council)
5. HORSHAM: A281
(West Sussex County Council)

False One-Way Streets - Figure 6.4



Chapter 7 - Rural Roads

Rural Roads

On a significant length of the National Cycle Network cyclists will share rural roads with other traffic. The objective is to incorporate into the National Cycle Network roads where vehicle flows are generally less than 1,000 vpd and where measures to introduce an element of traffic calming can be put in place. Rural roads vary from open fenland roads where visibility may be very good, to former drove roads with wide grass verges, to narrow lanes bounded by stone walls or high banks as in the Lake District or Devon. In many instances the sight lines are minimal and little more can be done to improve them. It should be noted that conditions often appear more hazardous to motorists, who cannot hear the sound of approaching vehicles, than to cyclists who can. Cyclists also have a much narrower width and so are able to pass an oncoming car where a motorist could not. Nevertheless it will often be necessary or desirable to reduce the speed of motor traffic using sections of rural road shared with or crossed by the National Cycle Network.

Measures for Rural Roads

The Countryside Commission has a strategy of promoting 'Quiet Roads', routes for pedestrians, wheelchair users, cyclists and equestrians.

Behaviour of drivers on minor rural roads varies, and designers will need to make use of local knowledge of traffic speeds in determining the measures to be used in association with the introduction of a National Cycle Network route.

At the same time the National Cycle Network may be used as a catalyst for introducing traffic calming measures in the countryside, aimed at reducing the speeds and in some cases the volume of motor traffic.

These measures might include:

(i)Speed limits

Reducing speeds to 30mph or below (20mph zones may be implemented in suitable rural locations and 15 mph speed limits have been introduced on Jersey's Green Lane network).

Speed limits may be introduced as part of an area wide approach eg. Romney Marsh, Kent and the New Forest, Hampshire. These would be reinforced by road markings (speed roundels) and traffic calming measures (rumble strips, gateways, narrowings etc). Within such zones, lower speed limits can be applied to selected roads.

Speed limits might also be used as part of a county road hierarchy approach where the lowest category of road, local access road, could be subject to a 20mph or 30mph speed limit. Such a road could be deemed to be for access to premises or land only, and so largely traffic-free for pedestrians, wheelchair users, cyclists and equestrians.

Speed limits might also be introduced on isolated sections of road used by the National Cycle Network, where appropriate in conjunction with calming features previously described.

Speed limit roundels painted on the carriageway may be used as repeaters in combination with upright repeater signs. To be effective they should be used together with physical traffic calming features.

(ii) Road Closure/Access Restriction

The most effective method for reducing traffic on minor rural roads is to close the road and provide a cycle gap. This can be achieved in a number of ways depending on the access needs of the locality: permanently with a locked gate with an unlocked gate.

Alternatively access can be restricted by weight restrictions width restrictions category of vehicle e.g. coaches, HGVs time and season.

Further, access restrictions have been introduced indicating a road closure, but with the road left open. Consideration could be given to additional measures, such as installing a gate which is kept permanently open, creating the impression that it could be closed.

Finally as part of a county road hierarchy signing can be used to direct traffic away from particular routes and onto more appropriate routes. This may also involve the re-arrangement of the layout of some junctions.

(iii) Engineering Measures

The introduction of pinch points (possibly incorporating a priority system) with cycle bypasses can not only reduce speeds but also act as a way of regulating vehicle flows on roads which suffer high seasonal or weekend flows but which have acceptable levels of traffic for the rest of the time. At some locations it may be appropriate to narrow a section of road to single track, with passing places. Motorists must be given sufficient advance warning of the presence of such features, such that they can comfortably modify their speed prior to reaching them.

Rumble strips, localised narrowing of the carriageway and optical width measures may be used on busy sections of rural roads shared with or crossed by the National Cycle Network, on which more modest speed reductions are required.

(iv) Changed Priority at Junctions

Where, for example, two roads each with less than 1,000vpd cross, the road with the major cycle flow could be given priority.

(v) Advisory Cycle Lanes

It is recommended that on roads carrying between 1,000 - 4,000 vpd the provision of advisory lanes be considered. On roads where the 85 percentile speed is greater than 40mph measures to reduce motor vehicle speeds should be considered. Advisory cycle lanes will act as a continuous warning to drivers of the presence of cyclists.

Other traffic calming measures include coloured surfacing at junctions, cycle logo (Diag No. 1057) on carriageway approaching hazard, signing and carriageway markings.

The assessment should include an evaluation of the experience of cycling on the road, which may conclude that no special measures are required.

The creation of a National Cycle Network route will offer the opportunity to introduce some rural traffic calming into areas where there are existing problems. This will benefit local residents, pedestrians, wheelchair users and equestrians alike.

Villages and Small Towns

The National Cycle Network will pass through numerous villages and small towns. Indeed it will go out of its way to do so. These are places cyclists will wish to visit, and it gives an opportunity to enhance the conditions for local cyclists on routine journeys.

Lightly trafficked roads through villages and small towns will be attractive as National Cycle Network routes. Where speeds are maintained at or below 30mph and traffic flows are below 1,000 vpd, the roads can safely be shared between cyclists and motor vehicles. Opportunities should be taken to enhance the environment for cycling by the introduction of a 20 mph speed limit with associated gateways and appropriate traffic calming measures.

Many towns and villages suffer a heavily trafficked main road. It is unlikely that this

would be used as the National Cycle Network route into the town or village but it may be the only realistic way through the centre. In this case measures described elsewhere such as cycle lanes, dividing strips between cyclists and parked cars, and segregated cycle tracks/footways should be considered.

The opportunity for a 20 mph speed limit should be investigated. If safe conditions cannot be achieved then it will be necessary to find an alternative route.

If the main road and shopping street is bypassed by the National Cycle Network it is important that local signing indicates how shops and other facilities can be reached from the National Cycle Network, and that directions are given to bicycle parking areas.

The appraisal of a small town or village high street for a National Cycle Network route should begin with traffic speed, flow evaluations, and dimension checks on the width of the highway between boundaries. At this stage it would be appropriate to consider whether the general environmental benefits and traffic reduction could be achieved through a traffic calming/traffic diversion approach. Removal of kerbside parking, contra-flow cycling where streets have been made one-way, and similar approaches should also be considered.

The National Byway

The National Byway, launched in November 1996, will comprise a 3,000 mile long recreational cycle route along existing minor rural roads and taking in more than 1,000

heritage sites. A further 2,000 miles of linked loops are being marketed for day trips. It is being developed in parallel with the National Cycle Network and a basis for cooperation has been agreed between Sustrans and The National Byway Ltd.

The National Byway is intended for leisure cycling, with particular emphasis being given to the attractiveness of the route rather than directness.

The route selection criteria conform to those of the National Cycle Network for safety and The National Byway will adopt and comply with the road safety elements of these Design Guidelines.

Signing of The National Byway is being agreed with the Department of Transport. Where sections of it coincide with National or Regional Routes, combined signs will be appropriate. The signing is not being covered by the Amendment Regulations and will require authorisation.

Cycle Area Gateway - Figure 7.1

Notes

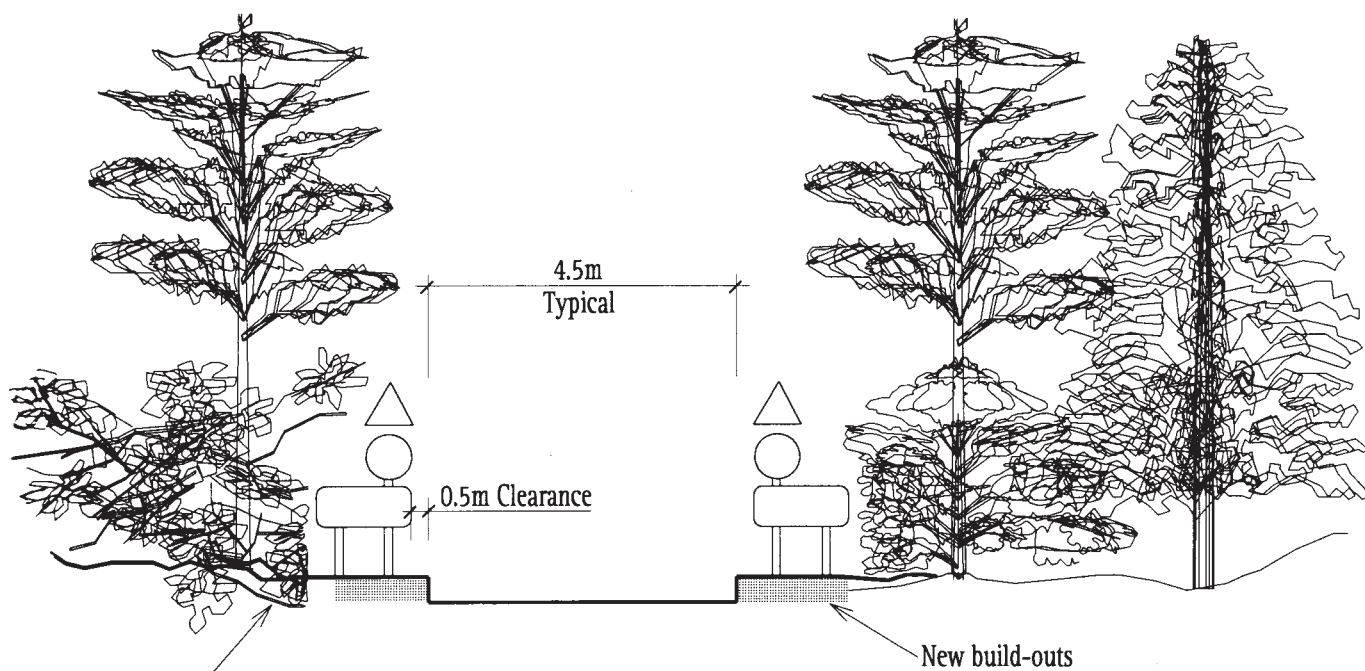
1. Gateways may incorporate speed limit signs.
2. Other features that may be incorporated into a gateway include speed roundels, rumble strips/surface, coloured surfacing, central refuge, white lining.
3. Gateways will often be part of area-wide traffic calming and be placed in advance of other measures.
4. The gateway sign may advise of the National Cycle Network only but in other instances will give the village name.
5. In areas where the National Cycle Network route is sufficiently remote from the gateway sign an alternative may be to locate the National Cycle Network route ahead signs separately.
6. The provision of a cycle bypass at gateways is recommended if required by traffic volumes.

References

1. Traffic Calming Act 1992
2. Highways (Traffic Calming) Regulations 1993 (SI 1993 No. 1849) (S)
3. Traffic Advisory Leaflet 13/93: Gateways
4. Traffic Advisory Leaflet 3/93: Traffic Calming Special Authorisations
5. Traffic Advisory Leaflet 1/94VISP - A Summary

Examples

1. Surrey : The STAR project is to implement a 40 mph zone, and several villages within the zone are to be calmed with gateways and 20 mph zones
2. There are many examples of gateways to villages in various forms



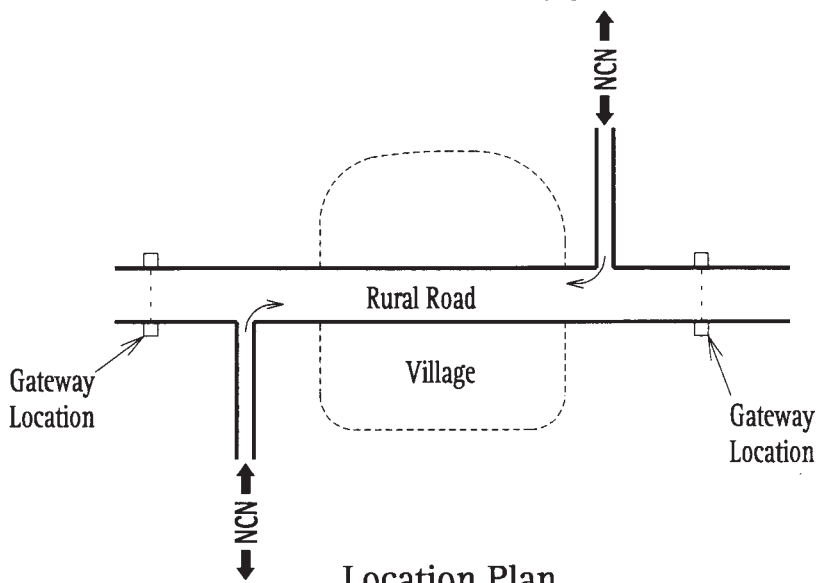
A cycle bypass can be provided at this location if considered necessary

Elevation Of Gateway



Typical Signing Arrangement (Without a village present)

The gateway features can be provided to enhance sections of the National Cycle Network route alone i.e. without a village present



Location Plan

Features on Links - Figure 7.2

Notes

1. The preferred method of making rural roads safe for cyclists on National Cycle Network routes is reduction of motor traffic volumes and/or speed.
2. Roundels have been incorporated into the details. These currently require DOT special authorisation as repeaters and must be used in combination with upright signs. It is expected that they will be prescribed in the Amendment Regulations. 30mph repeaters will only be prescribed for use on unlit roads. To be effective, roundels should be used together with physical traffic calming features.
3. Roundels have been shown centrally within the details. They are normally painted on the correct side of the carriageway, but if the width of the road is such that the roundel needs to be sited centrally then they should be repeated for the opposite direction.
4. Where speed limit enforcement is not in place, roundels are to be omitted.
5. The advisory cycle lanes are proposed to enhance traffic calming. Motorists are permitted into advisory cycle lanes whilst passing oncoming vehicles. The minimum width of 4.0m between cycle lanes will only be appropriate on low flow roads with good forward visibility, if the encroachment of motor traffic into the cycle lanes is to be minimised.
6. Edge of carriageway markings should be used sparingly.

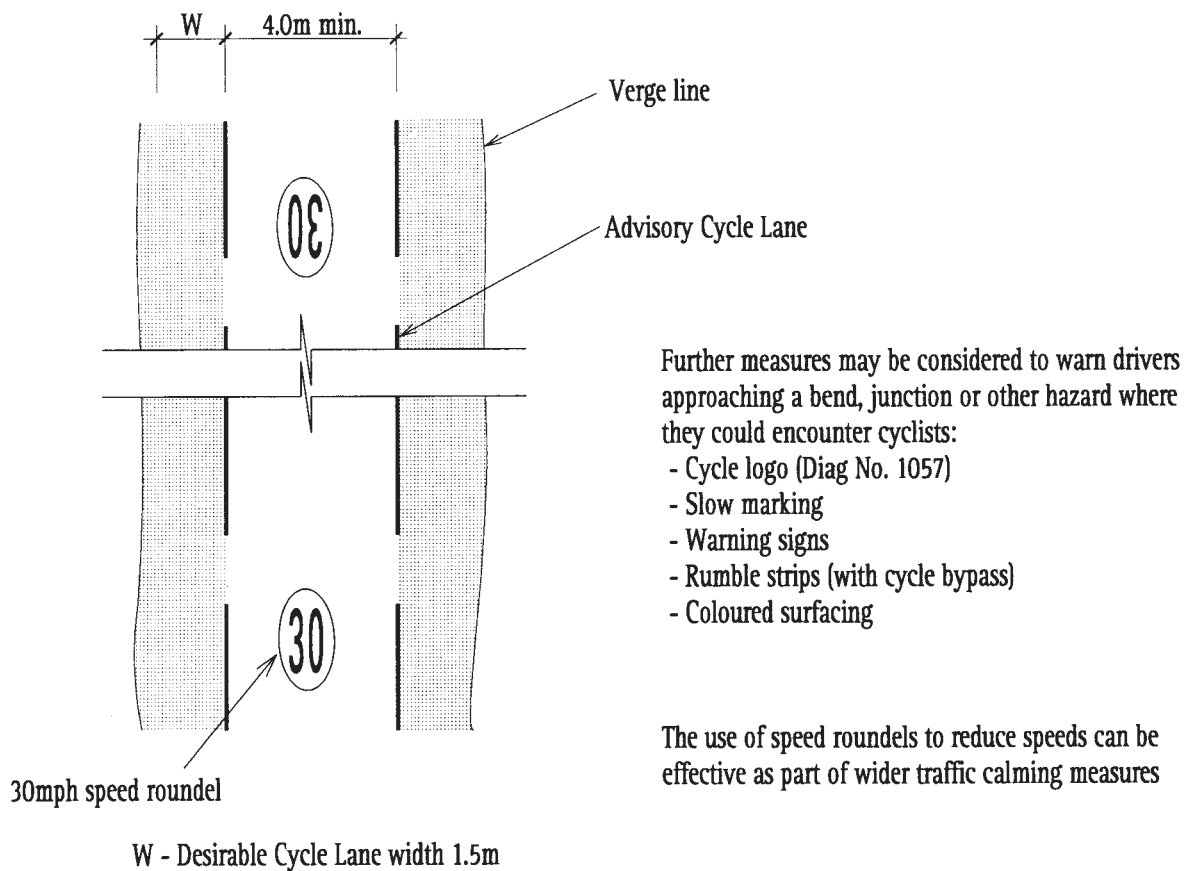
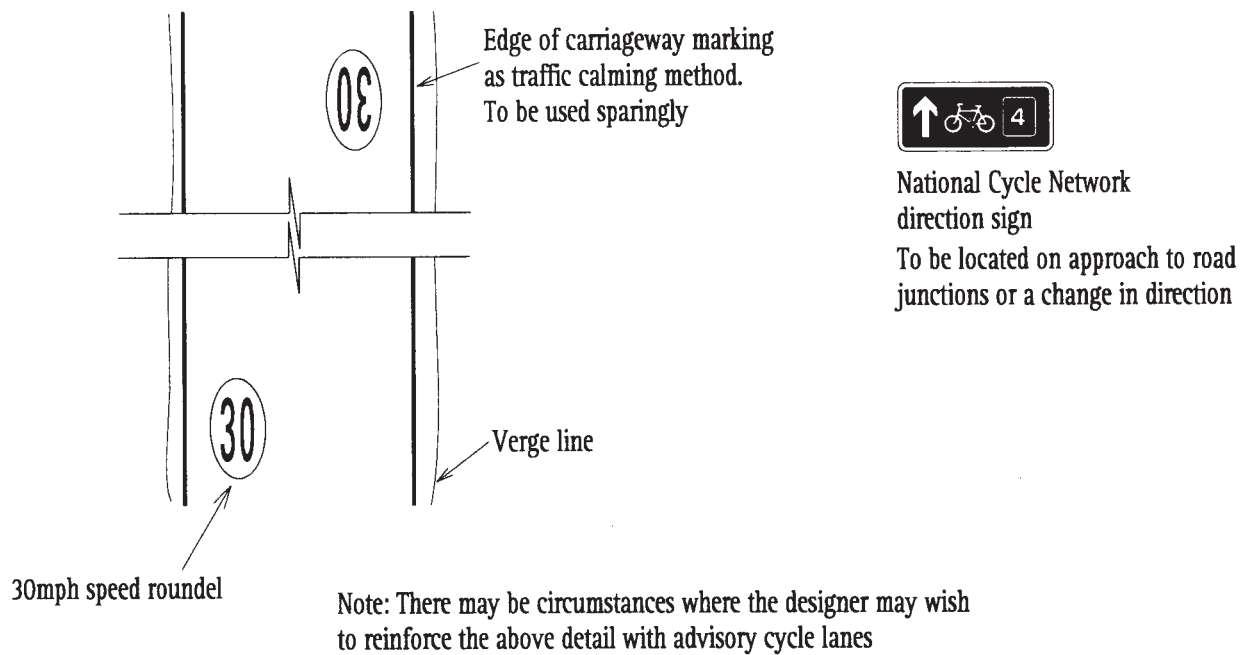
References

1. The Highways (Traffic Calming) Regulations 1993 (SI 1993 No. 1849) (S)
2. Traffic Calming Act 1992
3. Traffic Advisory Leaflet 1/94 VISP - A Summary

Examples

1. Currently, Kent County Council are proposing a 20mph limit on certain low standard rural roads as part of an area wide scheme for a 40mph zone in Romney Marsh (similar schemes, with 40mph limits, are already being tested). The boundary of the zones can be marked with gateways: repeater roundels can be painted on the carriageway

Features on Links - Figure 7.2



Major Road Crossings - Figure 7.3

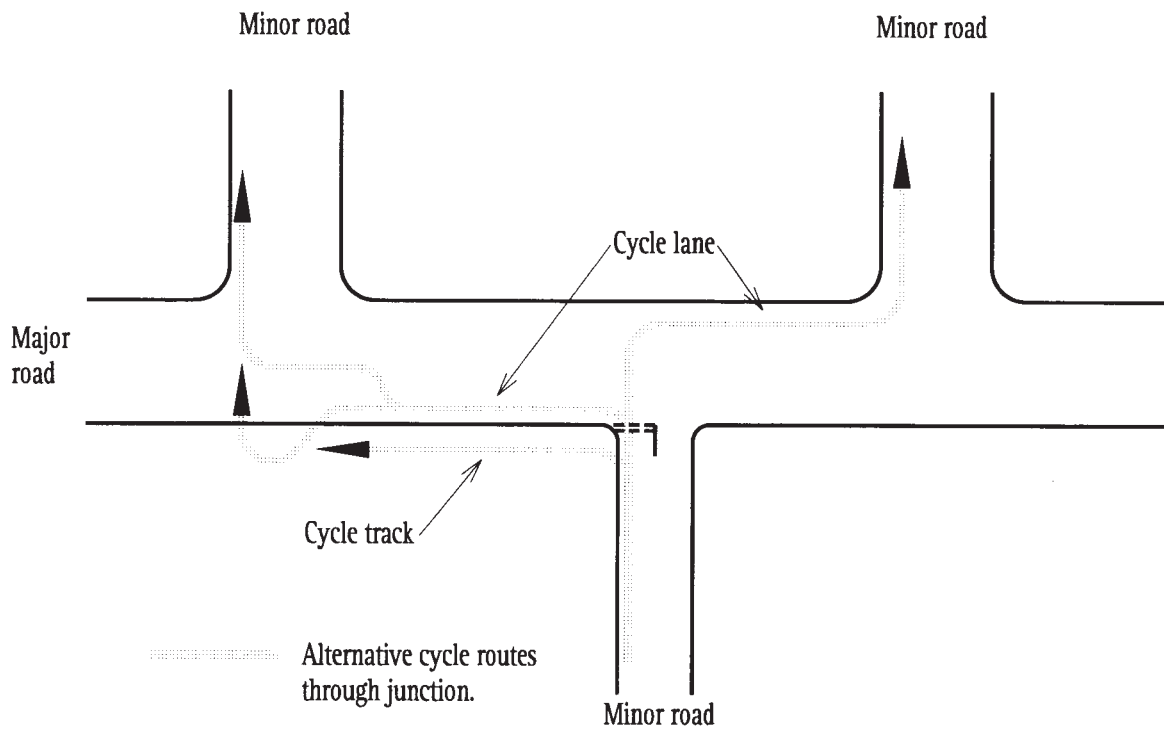
Notes

1. To resolve the conflicts when a cycle track crosses a major road it will be necessary to carry out an assessment using the LTN 1195 methodology as discussed in Chapter 5.
2. The table of vehicle flows should be used only as a guide in helping to determine the appropriate form of crossing. Whilst flow criteria are important, other aspects of a crossing **MUST** be considered and this should only be done by using the LTN 1195 methodology. The need for measures to reduce vehicle speeds on the main road approaches should be addressed if necessary.
3. The figures in the table are to be treated as guides only and not precise boundaries.
4. The table of flows draws a distinction between the straight-over junction, the arrangement where the cyclist first turns right onto the main road and then after a short distance left, and the more difficult circumstances of a left then right turn, where the cyclist may have to wait in the middle of a main road. This latter would only be appropriate at rather lower flows than the former. In some cases this problem can be alleviated by providing a separate cycle lane/cycle track with a jug handle feature, possibly with a central refuge.

References

1. Local Transport Note 1/86: Cyclists at Road Crossings and Junctions (S)
2. Local Transport Note 1/95: The Assessment of Pedestrian Crossings
3. Local Transport Note 2/95: The Design of Pedestrian Crossings

Major Road Crossings – Figure 7.3



Alternative Routes for Staggered Major Road Crossings (Schematic)

Details for road crossings in rural areas	Provision for cyclists and daily vehicle flow on the road to be crossed		
	Straight over	Right then left	Left then right
1. Priority arranged in favour of road used by cycle route	<1000	<1000	<1000
2. Priority to road to be crossed Give way on cycle route	<4000	<4000 Cycle Lane	<2000 Cycle Lane
3. Provision to pull in to left hand side before crossing	n.a.	n.a.	2000-4000 Cycle Lane
4. Central Refuge	<10,000	<10,000 Separate Cycle Track	<10,000 Separate Cycle Track
5. Signalisation or grade separation	>8000	>8000 Separate Cycle Track	>8000 Separate Cycle Track
Note: There will always be variation depending upon the particular situation, but crossing measures should be brought in at lower flows wherever possible			

Appropriate Crossing Options for Main Road Traffic Flows

Restricted Access Routes - Figure 7.4

Notes

1. It is recommended that if motor vehicular rights are to be extinguished then physical, self-enforcing features should be provided eg. bollards (Figure 9.4). If motor vehicular rights are to be restricted then the self-enforcing feature should be a gate. This can be locked or unlocked depending upon the access needs and consultation with affected land owners/occupiers.
2. Orders made under the Town and Country Planning Act 1990 to restrict or exclude vehicles from a highway can exempt cyclists. If physical self-enforcing features are not provided then the order may have to be backed by a Traffic Regulation Order.
3. Motor vehicles should be warned of the status of the affected minor road at its junction with the remaining highway network. Care should be taken with the location of the point of "closure" so that turning and reversing problems are not created.
4. Traffic Regulation Orders in the form of vehicle weight or width limits can also be considered.
5. Access restrictions may indicate a road closure, but with the road left open. Consideration could be given to measures such as installing a gate which is kept permanently open, creating the impression that it could be closed.
6. Non-local motor traffic can be discouraged by removal of signposts to the minor roads, or signposting it to include only very local destinations.
7. Accessible 'dead legs' to roads can attract undesirable activities.
8. Hedge trimmings can be a problem for cyclists on roads not 'swept' by traffic.
9. A width of 1.2m is sufficient to allow access for the largest types of cycle currently used by people with disabilities.

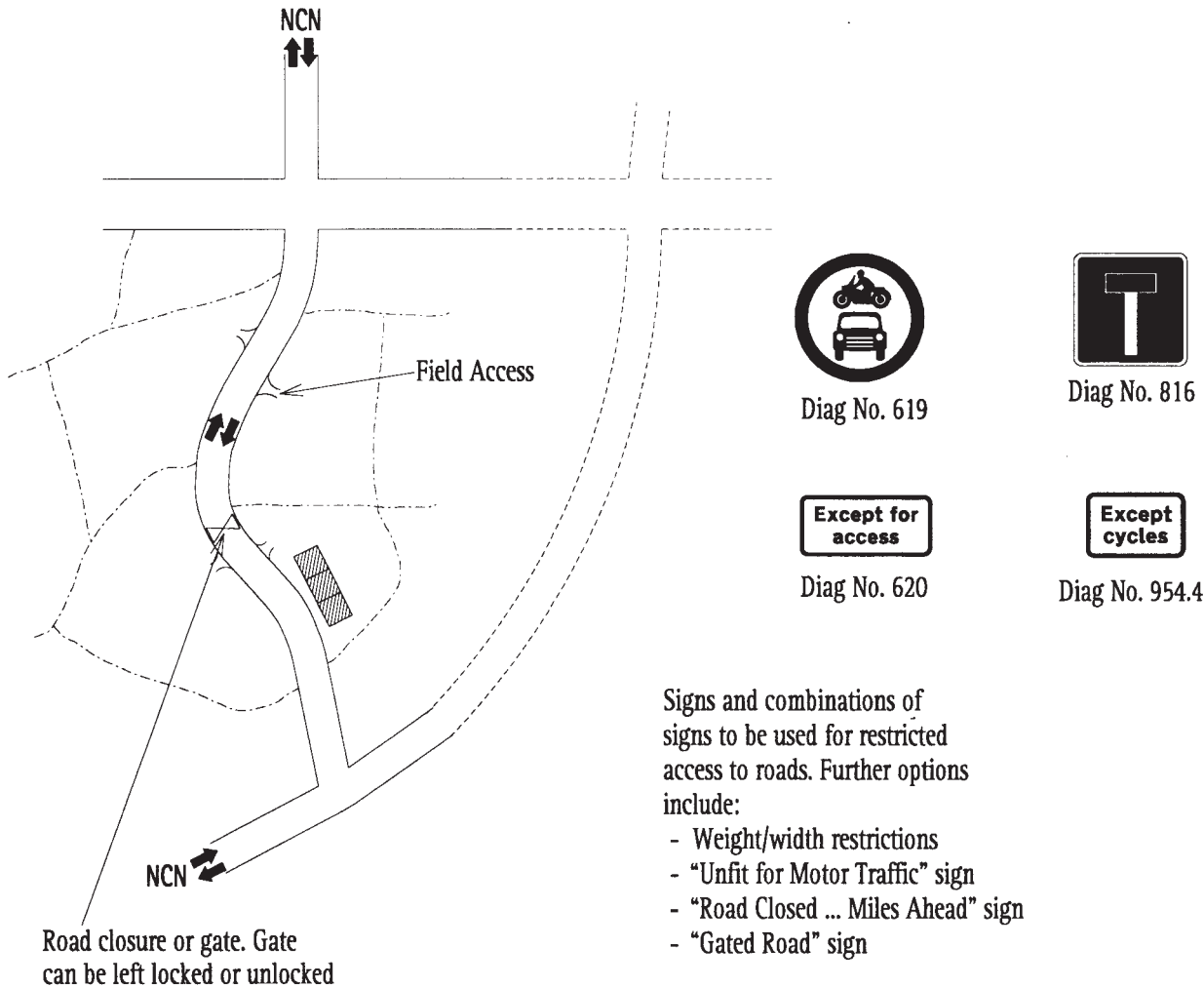
References

1. Town and Country Planning Act 1990 (S)
2. Road Traffic Regulation Act 1984
3. Campaigning for Traffic Calming: A Council for the Protection of Rural England Briefing Note May 1996
4. Traffic Advisory Leaflet 1/87: Measures to Control Traffic for the Benefit of Residents, Pedestrians and Cyclists

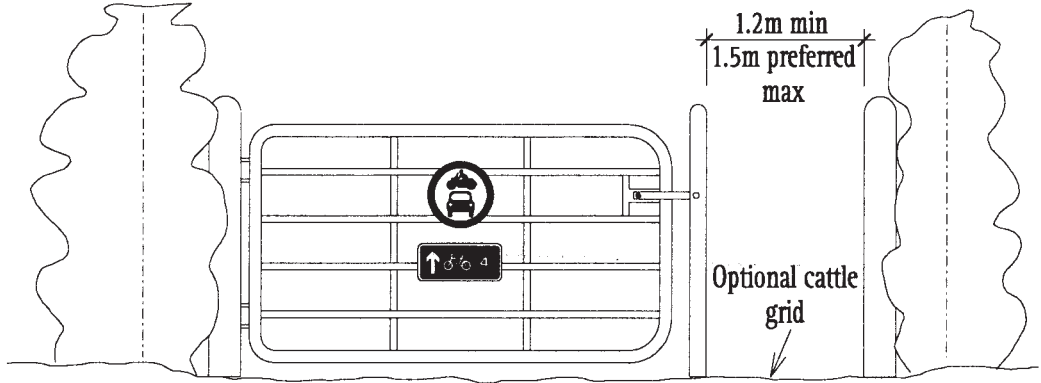
Examples

1. BRISTOL: Hobbs Lane
(Avon County Council)
2. LAKE DISTRICT: Underloughrigg Lane
(Cumbria County Council)
3. NORTH YORKSHIRE: Myton-On-Swale
(North Yorkshire County Council)
4. WANBOROUGH
(Wiltshire County Council)

Restricted Access Routes – Figure 7.4



Typical Restricted Access Plan



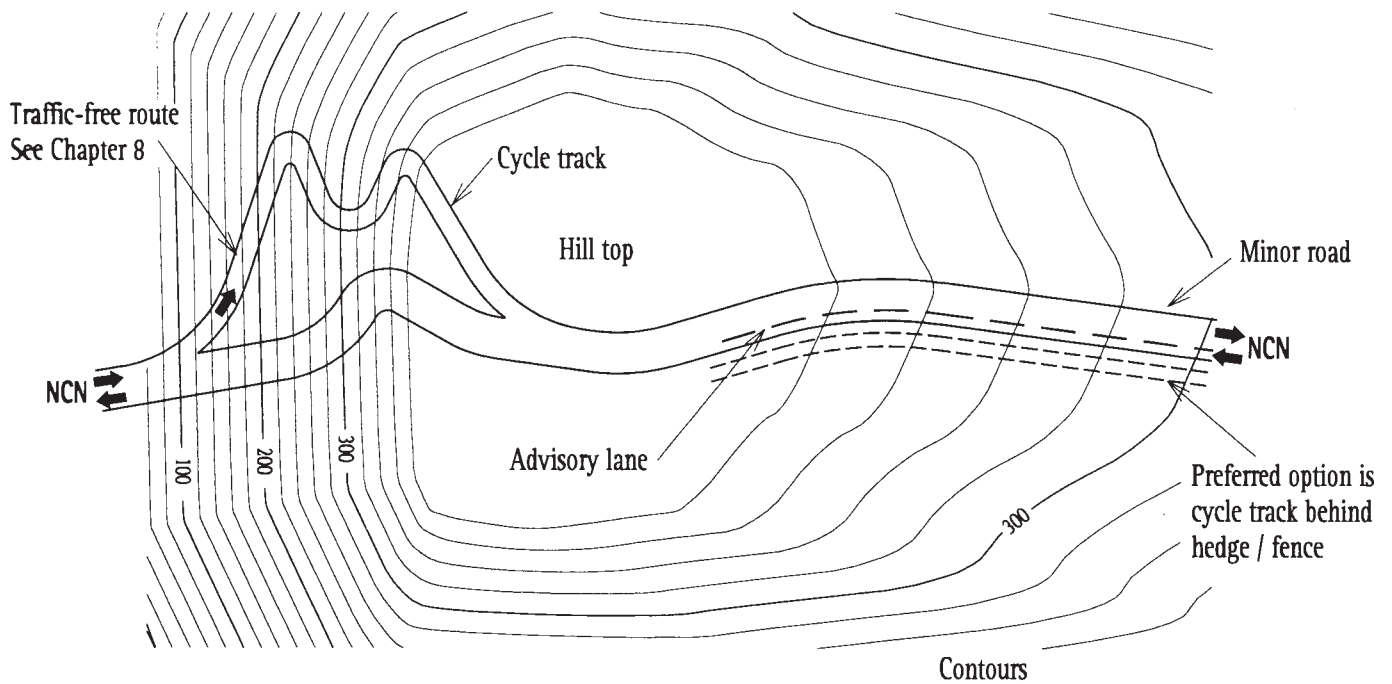
Typical Gated Road Closure

Cycle Routes Over Hills - Figure 7.5

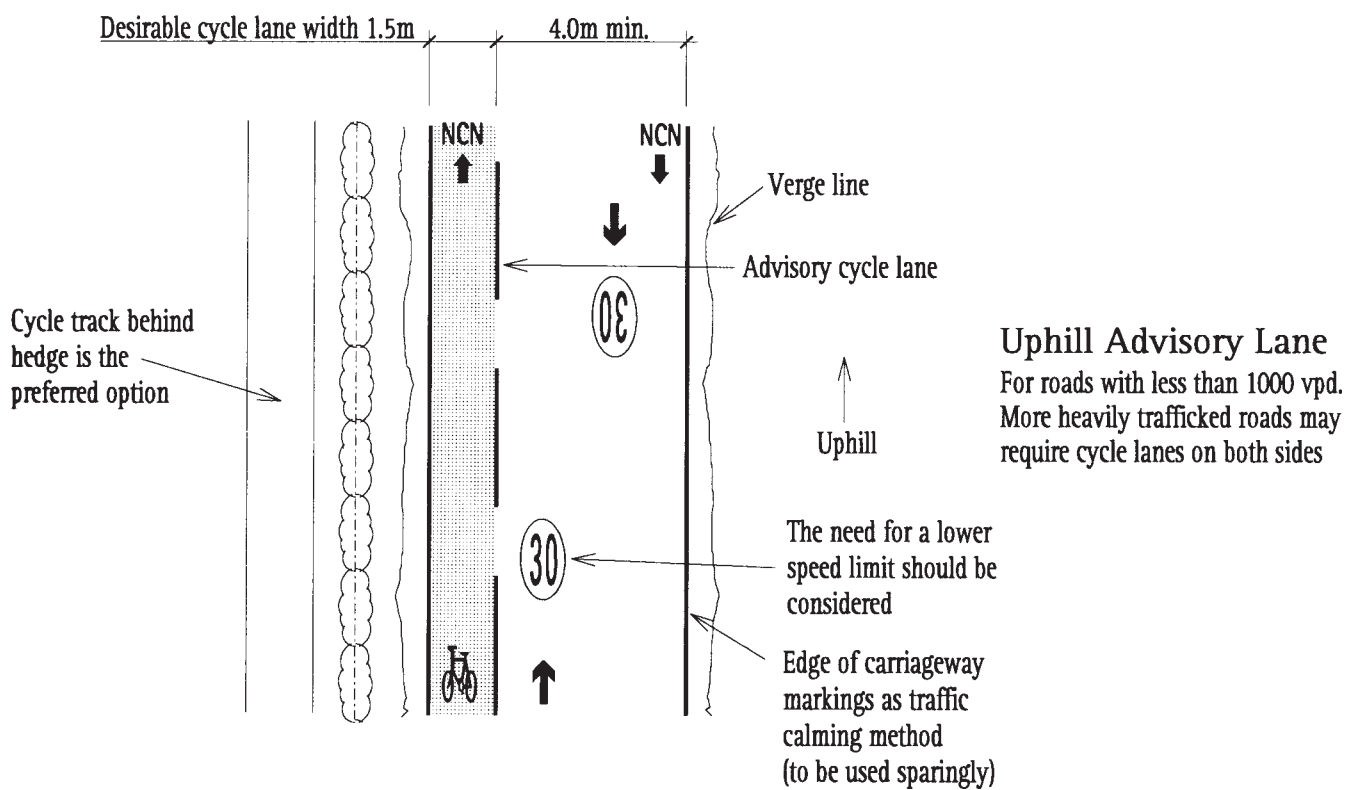
Notes

1. The speed differential between cyclists and motor vehicles is likely to be greater on the uphill section of a hilly route than the downhill section. This indicates that the uphill section has greater hazards for the cyclist than the downhill section and therefore should, if possible be treated in a different way.
2. On the uphill section the cyclist will be travelling slowly or may be walking, and will not therefore be comfortable on roads with significant traffic levels. If lightly trafficked roads are not available, it is desirable to offer an off-road option, even though it may fail to meet the standards of surfacing applied elsewhere on the National Cycle Network. Novice cyclists in particular may prefer to walk on such tracks rather than to share uphill roads with traffic.
3. If a separate route or braided path is not possible then an advisory cycle lane may be helpful.
4. On the downhill section the cyclist's speed may not be dissimilar from that of motor vehicles and so, even on more heavily trafficked roads, the interaction with vehicles may be limited. It is also worth noting that an unsurfaced path may well present particular problems for the cyclist travelling downhill.
5. For the use of roundels, refer to Figure 7.2.

Cycle Routes Over Hills – Figure 7.5



Braided Cycle Routes and Advisory Cycle Lane Uphill



Central Refuge Detail - Figure 7.6

Notes

1. This feature has been successfully used on a main road with a vehicle flow of 15,000 vpd and an 850/6 vehicle speed of 55-60mph. It is recommended however that the vehicle flow should be below 10,000 vpd and the 85% percentile vehicle speed below 60mph.
2. Good visibility is important for both motorists and cyclists. This feature is not common on rural roads and therefore care should be taken on its siting.
3. An assessment of the crossing using the LTN 1195 methodology should be undertaken before it is introduced.
4. Criteria for the use of double white lines and the length of taper can be found in Chapter 5 of the Traffic Signs Manual, and are dependent on traffic speed and visibility.
5. This detail can be incorporated into the beginning of a right turn ghost island.
6. See Figure 8.6 for details of visibility splays.
7. Warning signs (Diag No. 950) will normally be required on the approaches. Advice is given in Chapter 4 of the Traffic Signs Manual.
8. This detail may also be used when the cycle route approaches are on minor roads. In this case the refuge should be off-set from the junction with cycle tracks being provided on the verges.

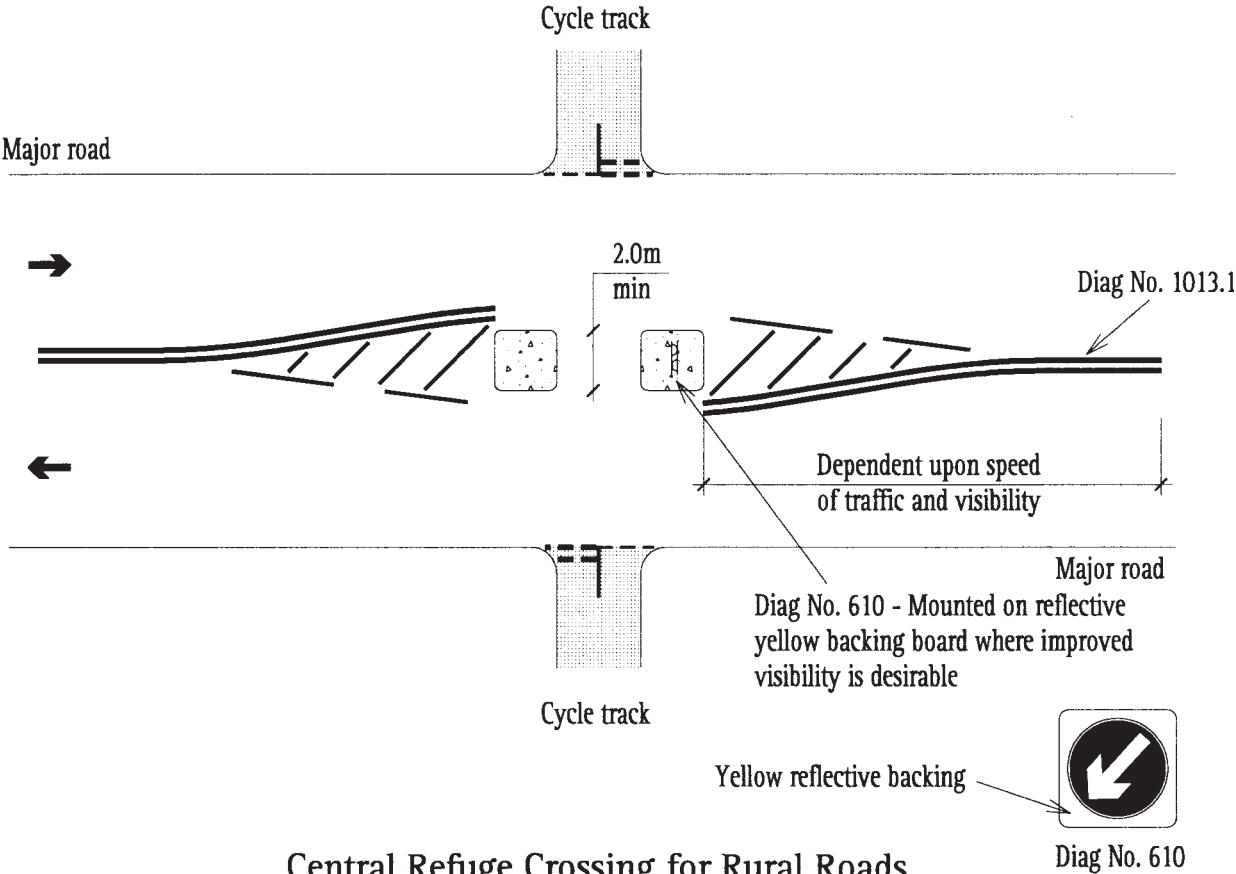
References

1. Traffic Signs Manual - Chapter 5
2. LTN 1/95 - The Assessment of Pedestrian Crossings
3. LTN 2/95 - The Design of Pedestrian Crossings
4. Traffic Advisory Leaflet 1/97 Cyclists at road narrowings

Example

1. DEVON : A386 between Plymouth and Yelverton
(Devon County Council)

Central Refuge Detail – Figure 7.6



Central Refuge Crossing for Rural Roads

Typical Rural Pinch Point - Figure 7.7

Notes

1. The advisory cycle lane is introduced to give cyclists road space through the pinch point, to remind motorists of the likely presence of cyclists and to visually narrow the road.
2. The signs shown on this drawing are illustrative. In practice, they will normally be sited at a greater distance from the feature than it has been possible to show in the drawing. The sign combination of Diag No.s 516/519 is optional and should be used in locations where advance warning is considered necessary.
3. Consideration can be given to reducing vehicle speeds on lightly trafficked rural roads through the construction of pinch points or reducing sections of road to single track working.

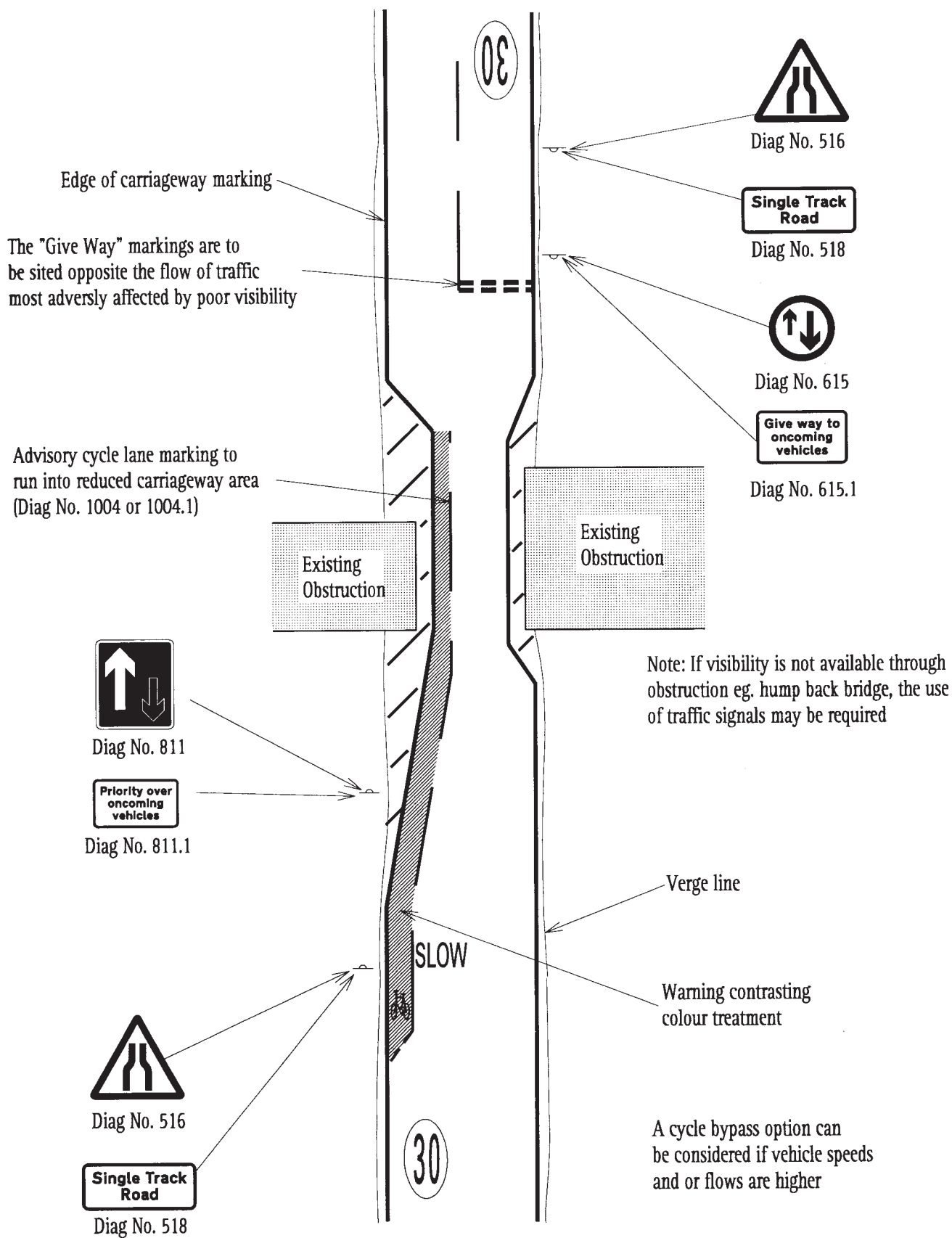
References

1. Traffic Advisory Leaflet 9/94: Horizontal Deflections
2. Traffic Signs Regulations Et General Directions (SI 1994 No. 1519)

Example

1. Fife Regional Council currently propose the construction of pinch points with cycle bypasses on a number of lightly used rural roads to deter motor vehicles

Typical Rural Pinch Point – Figure 7.7



Chapter 8 - Paths and Areas Free from Motor Traffic

Shared Paths

More than one-third of the National Cycle Network will follow paths along disused railways, river or canal banks, bridleways, unsurfaced tracks and forest roads. These will generally be free from motor traffic, although some will provide access to premises. The standards adopted should be based upon the design of established paths, and will relate to the likely levels and type of use of each section as well as the demands of the locality.

National Cycle Network routes will not all be of one type. Gravel roads may be appropriate in forest areas, stone dust surfaces in some rural areas and tarmac surfaces where a path provides access to premises for motor vehicles or where the journey to work is an anticipated use. Design speeds of 10-15mph should be assumed for most locations, although higher speeds may be expected on commuter routes and downhill sections.

All new sections of traffic-free path will be designed equally for pedestrians, including wherever possible people with a disability (including users of wheelchairs). In some instances, provision for horses will also be required, and in these cases the appropriate standard will very much depend upon the level of use anticipated. Whilst most sections of these paths will have unsegregated use, segregation will be appropriate in some circumstances.

In remote areas where total flows are low there will be no need to segregate pedestrians and cyclists. The minimum path width of 2m should suffice and designs should allow for the use of verges in passing. A raised white line delineator can be used to segregate users in busier areas, except where there are likely to be a significant number of people who are visually or mobility impaired, in which case the use of segregation by level may be appropriate. Where this is the case on the National Cycle Network, it is considered that a 50mm upstand is sufficient to give a clear signal to such users whilst minimising the hazard to novice cyclists. Where the pedestrian and cyclist volumes are approximately equal, the capacity of a path with white line segregation is about 180 users/hour/m width. The actual width of each part of a segregated path will depend on the expected proportion of different users and local standards, and will need to take account of local factors. Whilst it is an objective to achieve a path width of 2-3m, for unsegregated shared use it is recognised that this may not be practical at all locations, particularly on canal towpaths. The need for compromise dimensions should be identified at the planning stage before route selection is finalised so that an objective appraisal can be made of the alternatives.

Bridleways may provide useful routes in certain circumstances. This will generally entail providing a hedge or fence along each side, converting it into a 'Green Lane' separate from agricultural fields. For this reason, bridleways along field edges and across fields will often be impractical. Careful consideration should be given to their construction and surfacing, which will vary depending on the type of subsoil, width available, level of horse use and other types of user.

Where a new route is being created it may be appropriate to consider giving it the status of a permissive right of way. This can assist in achieving a route across private land.

Areas Free from Motor Traffic

National Cycle Network routes should reach the heart of town centres to enable both residents and visitors to reach the shops and cultural activities usually concentrated there. People arriving by cycle are very 'efficient' as customers because they make almost no demand for road space, parking or public transport.

National Cycle Network routes should be seen as complementing and enhancing the town centre environment. To achieve this their introduction will need to be the subject of consultation with local people and the local authorities.

Public Spaces

The approach to many town centres will depend upon being able to use some part of an existing path through a park, along a riverside or other public space. Here the greatest care is needed to ensure that existing pedestrian or wheelchair users are not unreasonably inconvenienced but actually benefit from the introduction of the new cycle route. This may occur not only through improved path surfaces and the extension of paths, but also crucially through much better continuity at road crossings and reduced traffic speeds or volumes on adjoining roads.

In general cycle routes through such public spaces are likely to be shared with pedestrians. They should be well defined with pedestrians having the remainder of the area for their continued exclusive use.

Streets Free from Motor Traffic

It is not uncommon in town centres for cyclists to find themselves confined to the busy roads encircling a pedestrianised area, with the consequent inconvenience and hazards. The objective should be to integrate cyclists into the areas from which motor vehicles have been excluded, enabling them to get as close as possible to their destinations in the centre.

In such areas pedestrians and cyclists can often share the same space without segregation (see also Figure 3.1). Where volumes of pedestrians and cyclists are high, a segregated cycle route may be appropriate, with connections into the surrounding streets. Where pedestrian use is particularly high, restrictions on cyclists may be appropriate during the busiest periods, in which case a safe and reasonably direct alternative cycle route should be provided.

A study by the Transport Research Laboratory concluded that there are no real factors to justify excluding cyclists from pedestrianised areas, and that a wide variety of regulatory and design solutions exist to enable space to be used effectively and safely in these areas, which could be tailored to the local circumstances.

Cyclists are more likely to be accepted in pedestrianised areas where there is already a certain amount of access traffic rather than those areas where there are no exemptions. Streets which are currently available to buses or taxis or for access by service vehicles or orange badge holders should also be available as cycle routes.

It is always important when introducing cycling into pedestrian areas to ensure that appropriate publicity and education material is disseminated to promote the need for responsible cycling.

Shared Cycle Tracks/Footpaths/Bridleways - Figure 8.1

Notes

1. Cyclists and pedestrians should be segregated on steep paths where higher cyclist speeds can be anticipated.
2. Mowing should be carried out reasonably frequently (at least twice per year) to keep a short verge either side of the path.
3. The line of the path should be arranged where possible to provide a variation of views. Careful control of vegetation may be necessary and in places "windows" may need to be cut through trees and hedging, where environmentally acceptable.
4. It is recommended that where a bridleway runs immediately next to the cycle track/footpath the latter should be provided with a bituminous surface to discourage horses straying onto it and causing damage.
5. Where an existing bridleway runs alongside a field boundary, it may be possible to negotiate converting the route into a 'Green Lane'.
6. Where space permits, it is preferable to separate the bridleway and cycle track/footpath by several metres and if possible by planting.
7. Construction details for shared cycle tracks/ footpaths/bridleways are shown on **Figures 8.5 and 8.6.**

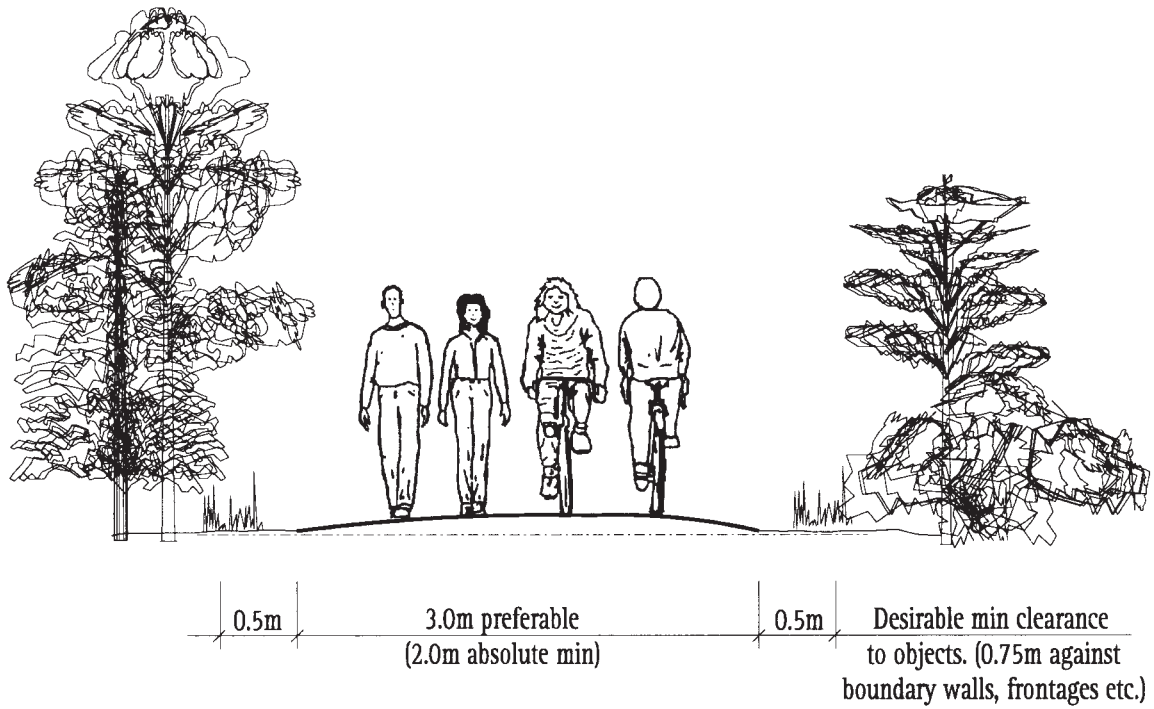
References

1. Local Transport Note 1/89: Making Way for Cyclists (S)
2. Traffic Advisory Leaflet 1/86: Cycle Route Project, Stockton
3. Traffic Advisory Leaflet 3/86: Cycle Route Project, Bedford, The Hastingbury Route
4. Traffic Advisory Leaflet 3/95: Cycle Routes
5. Making Ways for the Bicycle - A Guide to Traffic-Free Path Construction - Sustrans
6. Local Transport Note 2/86: Shared Use by Cyclists and Pedestrians (S)

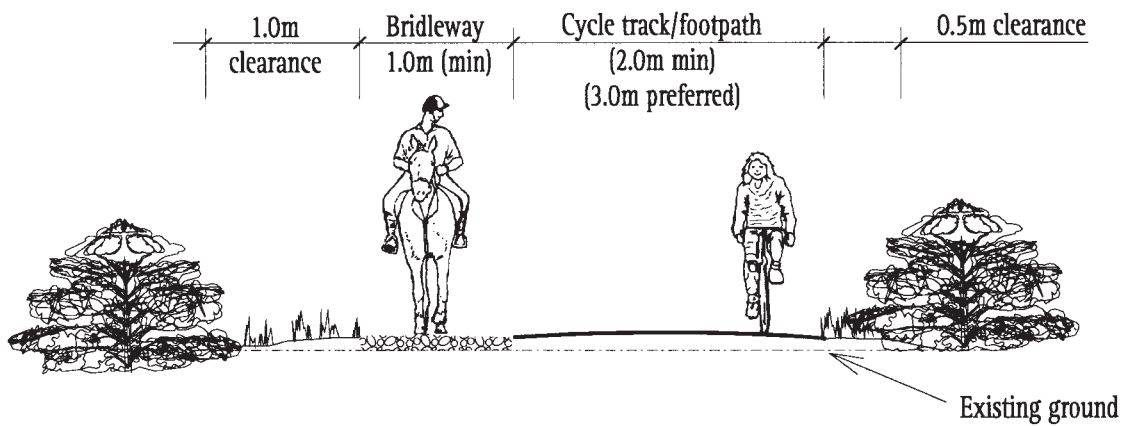
Examples

1. BRISTOL/BATH: Railway Path
(Avon County Council)
2. HAILSHAM: The Cuckoo Trail
(East Sussex County Council)
3. HUTTON TO PRESTON: Cycle Route
(Lancashire County Council)
4. LIVERPOOL/ SEFTON: Cheshire Lines Path
(Lancashire County Council)
Ainsdale to Aintree Path
(Merseyside County Council)

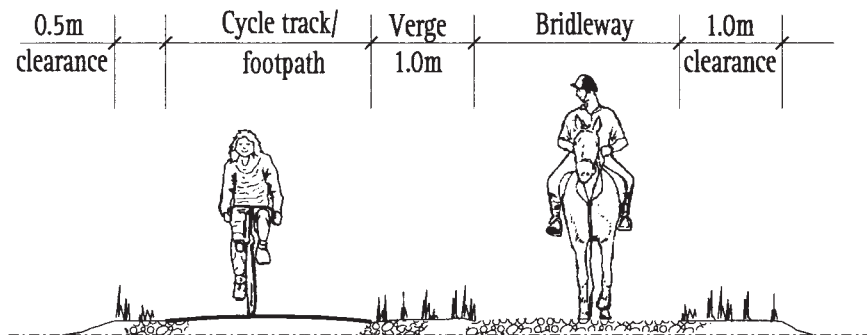
Shared Cycle Tracks/Footpaths/Bridleways – Figure 8.1



Shared Cycle Track/Footpath



Shared Cycle Track/Footpath with Adjoining Bridleway



Shared Cycle Track/Footpath with Separate Bridleway

Canal Paths - Figure 8.2

Notes

1. Where existing paths are being reinstated the finished level should be higher than the adjacent ground for free drainage of the path surface.
2. Geotextile fabric will normally be required in constructing or reinstating paths as generally poor ground conditions are found adjacent to canals.
3. Access points to the path may be infrequent and the construction thickness of the path may need to be increased to allow use by construction plant traffic.
4. The details show bank reinstatement as a method of gaining path width. This is usually an expensive option and probably only suitable for short lengths of path. Revetment can be achieved by a number of methods: sheet piling, stonework, gabions and oak post and larch board. Sheet piling is considerably more costly than alternative methods.
5. Any practical work for National Cycle Network routes will need detailed appraisal by British Waterways or the appropriate owner. Construction work details are to be discussed and agreed with the British Waterways Regional Manager or the appropriate owner prior to construction.

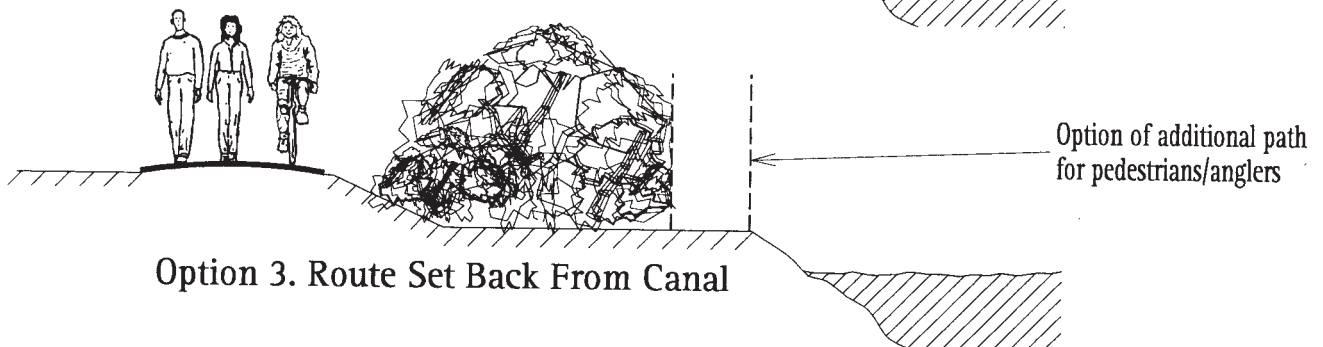
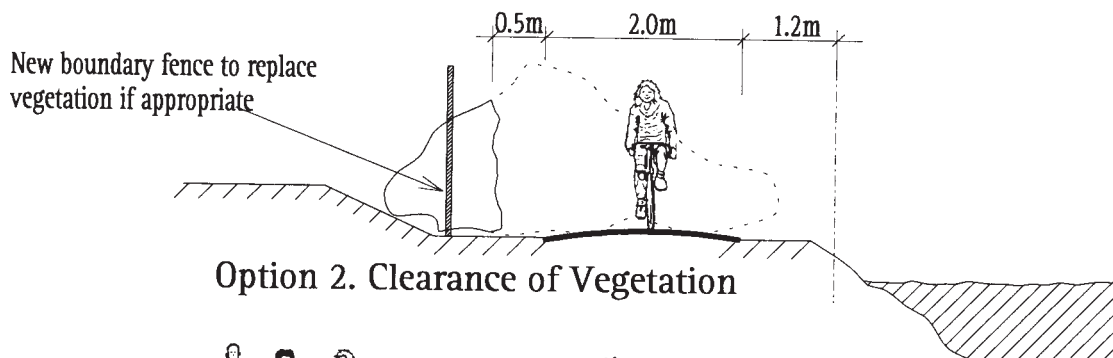
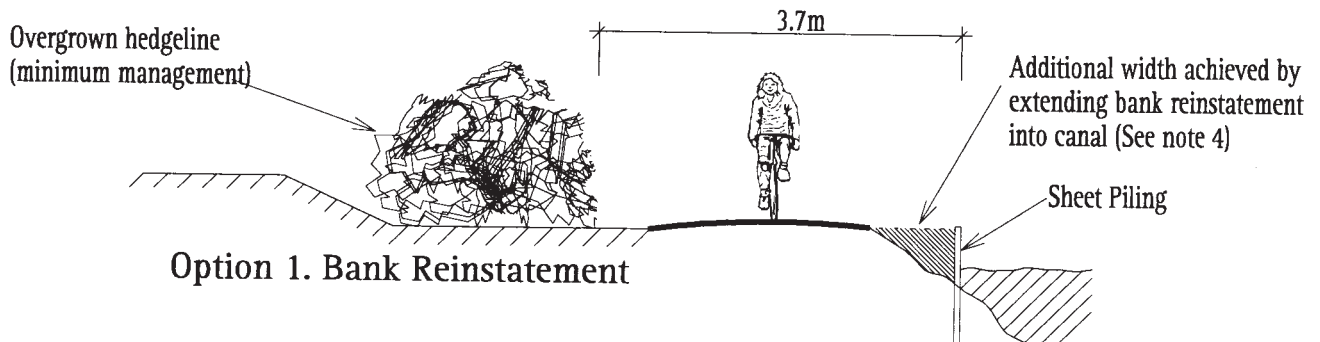
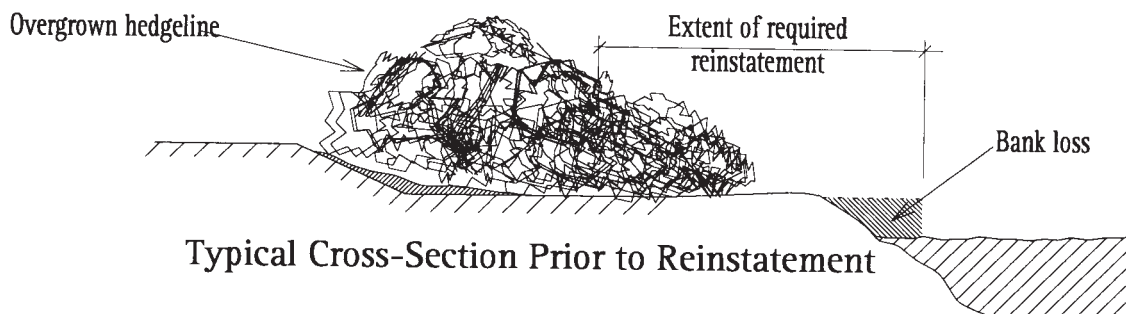
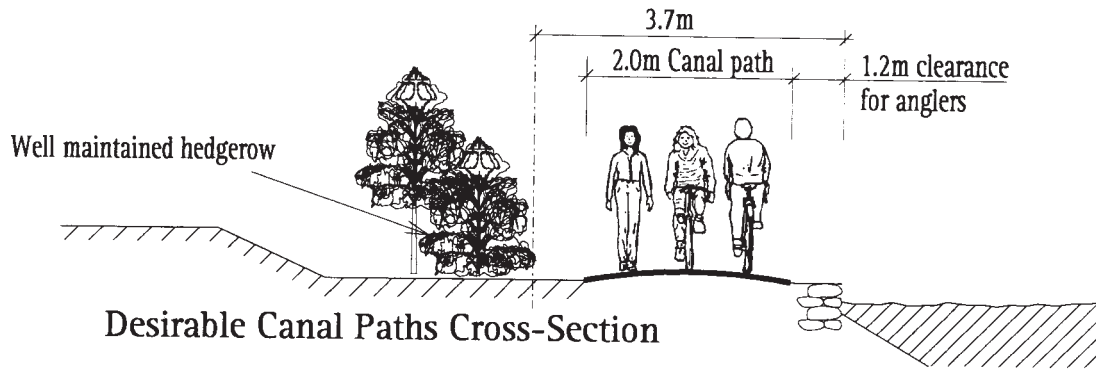
References

1. Making Ways for the Bicycle
A Guide to Traffic-Free Path Construction - Sustrans

Examples

1. WIGAN: Burscough Canal Path
(British Waterways)
2. BIRMINGHAM: Birmingham Canal
(British Waterways)
3. TAUNTON: Bridgwater Canal
(British Waterways)

Canal Paths – Figure 8.2



Canal Path Balustrades - Figure 8.3

Notes

1. On very narrow sections through canal bridges it may be appropriate to indicate to cyclists that they should dismount (Diag No. 966), or for other suitable warning signing to be provided,
2. The direction signs and waymarker signs as shown in Figure 9.1 can be used when necessary, but away from the public highway, signing appropriate to the location should be agreed with the landowner. The same standard of clarity and continuity will be expected and the route number patch would continue to be red or blue as appropriate.

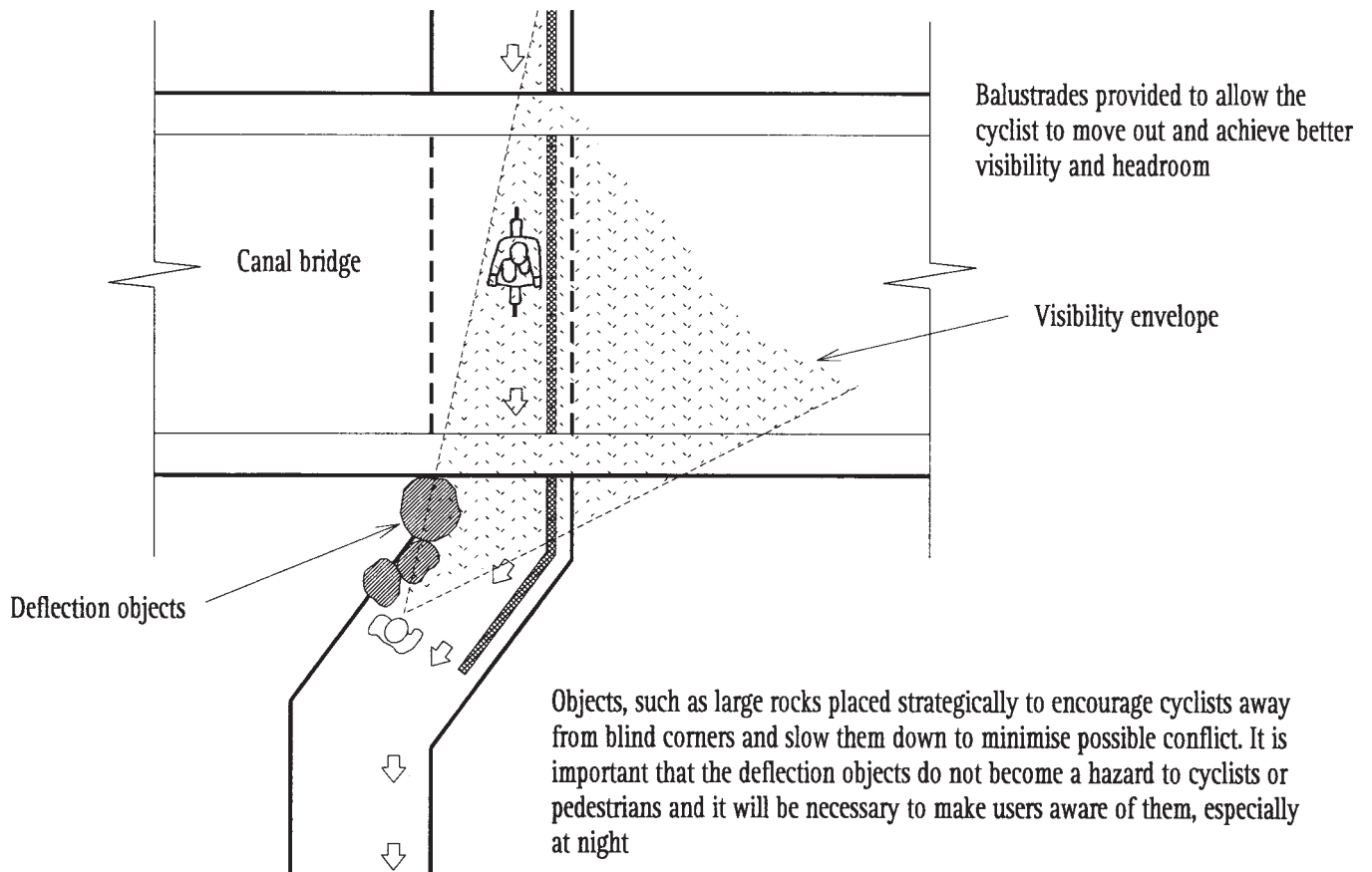
References

1. BD 52193 The Design of Highway Bridge Parapets
2. Making Ways for the Bicycle
A Guide to Traffic-Free Path Construction - Sustrans

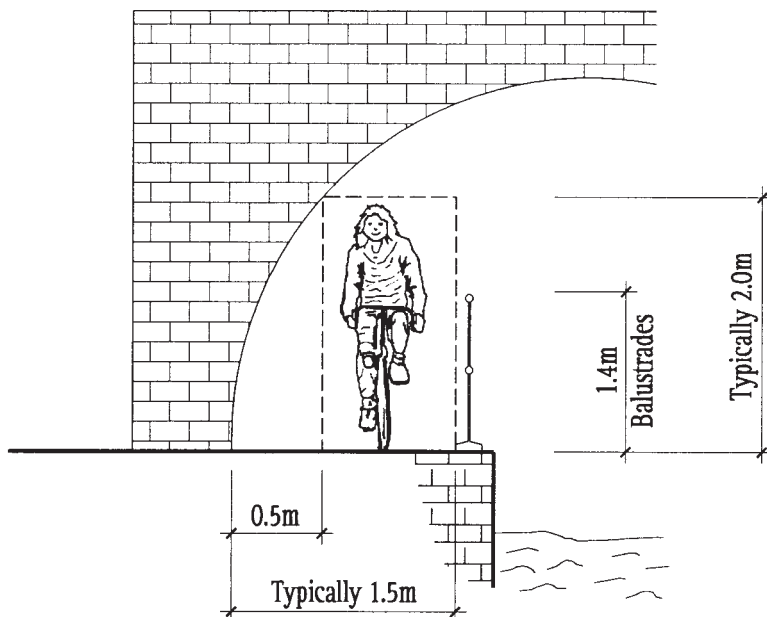
Example

1. Kennet & Avon Canal, Bathampton

Canal Path Balustrades – Figure 8.3



Plan of Canal Bridge



At bridges over canal towpath, the width is generally 1.5m over short lengths with good visibility. This will often provide the safest crossing of a busy road

Balustrade to have a smooth top

Section through Canal Bridge

Widths of Segregated Cycle/Pedestrian Facilities - Figure 8.4

Notes

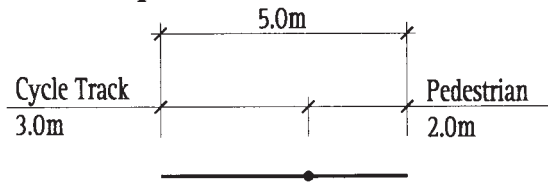
1. More general notes on the use of segregated cyclist/pedestrian facilities are provided in Figure 4.7.
2. When a segregated facility is created on a public footway or footpath then two distinct, though adjacent ways are created:
 - a) a cycle track - which will usually have a continuing right of way on foot to allow pedestrians to cross it or cyclists to wheel their bicycle along it; and
 - b) an adjacent footway or footpath which has a right of way on foot only and on which it is illegal for a cyclist to ride.
3. Experience has shown that high pedestrian and cycle flows can be catered for in safety on shared facilities of restricted width. The appropriate path widths should be determined with reference to the likely level of usage.
4. The most common recommended minimum width for cycles is 2m, but this can be reduced to the figures shown in brackets on a path segregated by a raised white line delineator (Diag No. 1049. 1).
5. The most common method of tactile segregation is by using the raised white line delineator (Diag no. 1049. 1) combined with tactile paving. The use of a 50mm change of level may be appropriate in certain locations on the National Cycle Network to suit local conditions or where its omission will be particularly detrimental to partially sighted people.

Reference

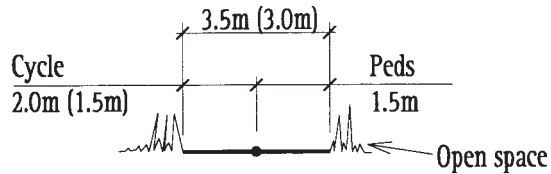
1. Local Transport Note 2/86: Shared Use by Cyclists and Pedestrians (S)

Widths of Segregated Cycle/Pedestrian Facilities – Figure 8.4

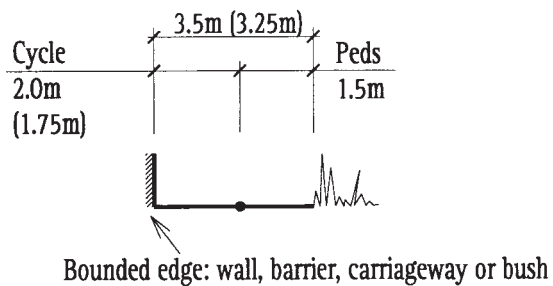
Optimum Dimensions



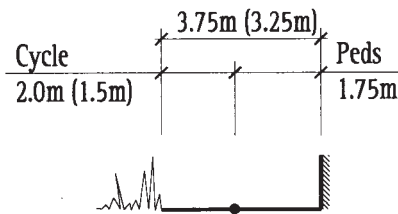
Minimum Dimensions



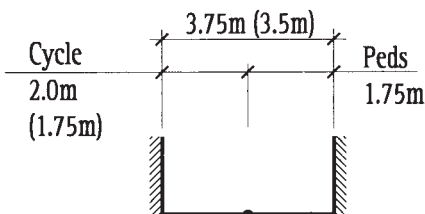
Open Both Sides



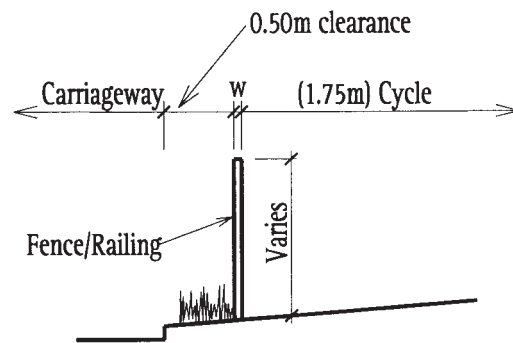
Bounded Cycle Track



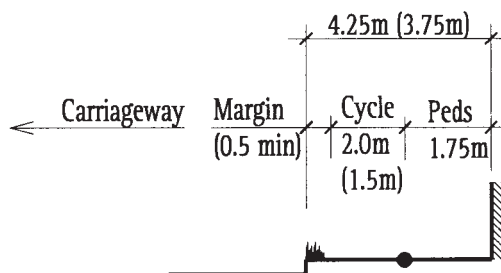
Bounded Footway



Bounded Both Sides



Where the margin contains safety fence or guard rail the portion of track adjacent is to be considered bounded. The width of the margin should be increased to include the width of the fence and the clearance from the carriageway



Bounded with Verge to Carriageway

Note: The dimensions given are the minimum required to permit cyclists and wheelchair users to pass each other on their respective paths. Dimensions in brackets refer to minimum width on a path segregated by a raised white line delineator

Construction Materials and Thickness - Figure 8.5

Notes

1. The table opposite is for guidance purposes only. The designer will make the choice of surfacing on the basis of the following criteria:

- aesthetic considerations - suitability for purpose - construction and maintenance costs - construction methods.

2. The construction thicknesses, particularly sub-base, will be designed on the basis of the following information:

- the strength of the sub-grade/use of geotextile membranes - drainage and frost susceptibility of the sub-grade - type of surfacing
- design life - location of cycle track (what level of traffic will it be subject to from motorised vehicles and horses) - the construction method (size of construction plant used).

3. The specifications in the table opposite will generally be acceptable in well drained areas, with formations with a CBR > 2.5% and lightly trafficked.

4. The use of french drains will need to be considered if the construction is likely to become water logged.

5. It is recommended that bitumen materials be machine laid and that the specifications applied to surface tolerances bumpiness/unevenness be those applied to highways.

6. It is important that the edge of the track is not formed with an upstand of any sort as this can impound water and present a hazard to cyclists.

7. Wherever possible the use of reclaimed materials such as road planings or crushed concrete should be considered.

References

1. Making Ways for the Bicycle
A Guide to Traffic-Free Path Construction - Sustrans
2. Guide for Design of Footways - Interpave,
The Precast Concrete Paving and Kerb Association

Construction Materials and Thickness - Figure 8.5

Cycle Track Construction Materials and Thickness

Surface	Construction Details	Comments
Macadam	Wearing Course Base Course Sub Base	Suitable for heavily used routes Allows for colour surfacing variation
Macadam (Alternative)	Wearing Course Base Course	Suitable for heavily used routes
Limestone Dust	Wearing Course Base Course	Dust can spray when wet Alternative surface materials may be appropriate in certain areas Surface dressing can be applied once path has settled
Tar spray and chippings on bitumen	Wearing Course Base Course Sub Base	Range of attractive finishes available by selecting chippings Surplus chippings should be removed after spreading Extra strength can be achieved with reinforced surface dressing, eg Fibredec
Tar spray and chippings on stone base	Wearing Course Base Course Sub Base	
Coxwell Gravel (or similar)	Wearing Course Base Course	
Block Paving	Wearing Course Base Course Sub Base	Interlocking blocks can be used on soft sand, eg dunes Tends to trap glass and debris

Construction Details - Figure 8.6

Notes

1. In constructing rural paths the types of user expected must be taken into account, especially horses and heavy farm vehicles. Routes along which cattle are herded regularly should be avoided.
2. On rural paths with restricted width, the cross-section may need to be divided longitudinally between hard and soft surfacing to suit the different users. For example load bearing path could be provided on each side to carry farm vehicles and cycles, with a soft central bridleway.
3. Appropriate strengthening of the surface may be required on short sections of paths crossed by farm vehicles.
4. Interlocking block paving can be used without edging restraint in sandy areas.
5. Repairs to cycle tracks should be made using sympathetic materials.

Visibility Splays

6. Where a new cycle track meets a local highway different advice on visibility requirements to those outlined in Design Bulletin 32 may be appropriate, recognising that Design Bulletin 32 focuses on visibility at the junctions between all vehicle carriageways, rather than a cycle track/ all vehicle carriageway junction.
7. Where the cycle flow is 200 - 500 cycles per day the x-distance can be 2.4m min. Where the cycle flow is less than 200 cycles per day the x-distance can be 2.0m min. If these visibility requirements cannot be achieved the alternative is to use the full range of markings and signs available to make clear the need for cyclists to slow down and give way. The use of the "Stop" sign is not appropriate for cycles, given the slower speed at which cycles can be expected to be travelling compared with motor vehicles. Using "Give Way" options will also be simpler procedurally as the "Stop" sign requires approval from the Secretary of State.

Dropped Kerbs

8. The transition from cycle track or footway to carriageway should be as smooth as possible with no upstand. Even a small upstand is a hazard to wheelchair users and uncomfortable for cyclists.
There is no evidence that properly designed flush surfaces cause ponding.

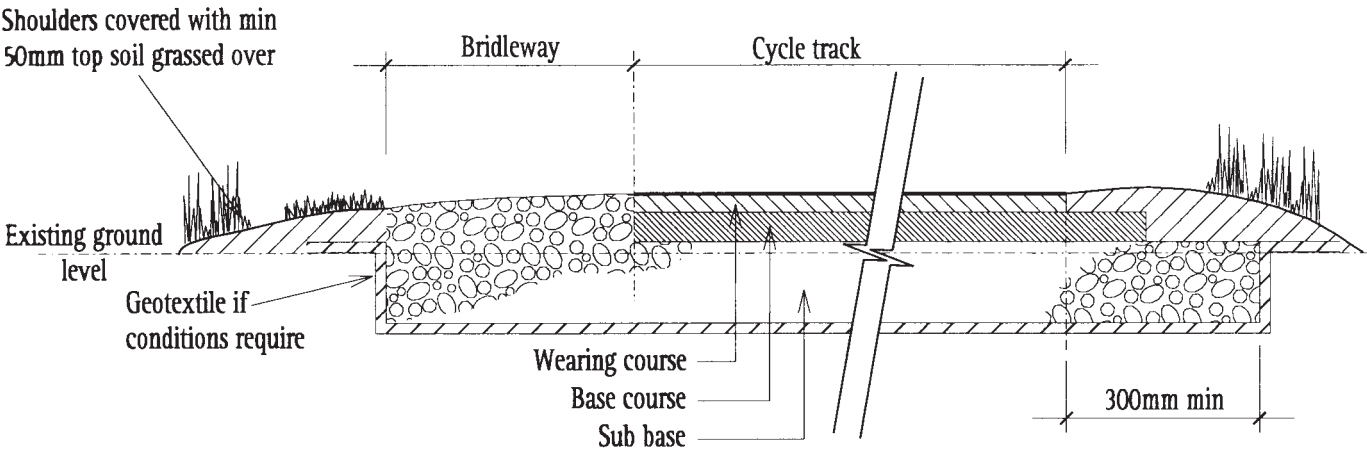
References

1. Making Ways for the Bicycle
A Guide to Traffic-Free Path Construction - Sustrans
2. Design Bulletin 32
Residential Roads and Footpaths - DoE/DOT
3. TD41/95
Vehicular Access to All Purpose Trunk Roads

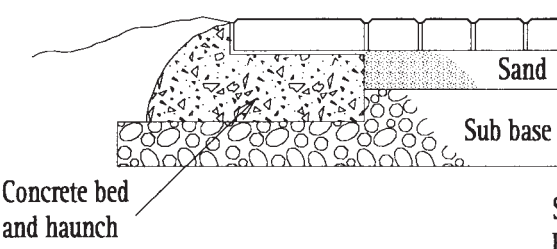
Construction Details – Figure 8.6

Typical Construction

Note: Path to be generally 75mm above existing ground level and laid with 40mm crossfall or 25mm central camber to eliminate ponding, or on low causeway through wet or flooded areas

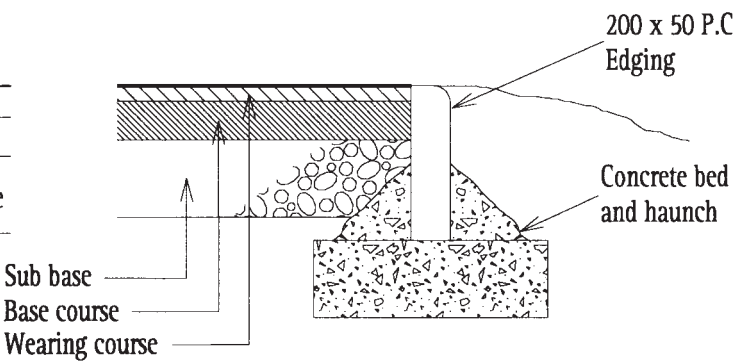


Typical Edge with Bridleway



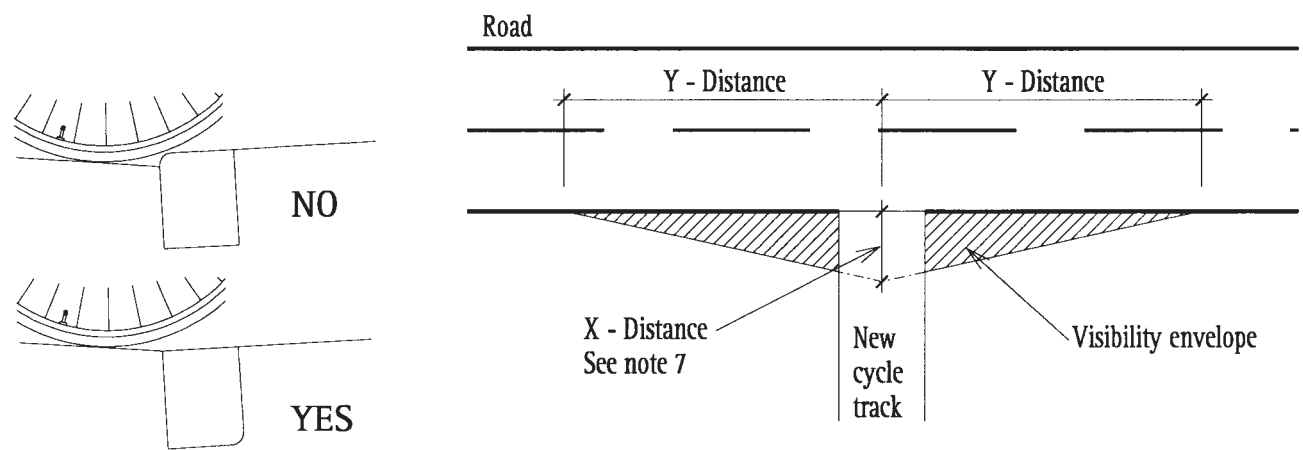
Block Paving Edging

Typical Edging



P.C. Concrete Edging

Visibility Splays for New Cycle Tracks



Section Through Dropped Kerb Detail

85 percentile speed of priority road vehicles (mph)	53	44	37.5	30	25	20
Y - Distance (m)	160	120	90	70	45	33

Note: All dimensions in mm.

Chapter 9 - Signing, Parking and Other Details

Signing

The attractiveness of a National Cycle Network route to potential users will in part depend on the quality, coherence and frequency of signs.

Signing is covered in general terms by the Department of Transport guidance for road traffic signs. These signs are applicable to all road users. However, smaller direction signs are prescribed for use where the message is intended only for cyclists, as they are generally travelling more slowly than motorists, and therefore do not need to read the legend at so great a distance.

In order to identify the unique character of the National Cycle Network, all signs will contain the route number and red patch. This is in contrast to a blue patch for regional routes. Number patches may be added on to existing cycle route signs where there is room to do so, but it will usually be necessary to replace the sign.

As the number of cycle routes increases, routes will inevitably overlap and it may be necessary to rationalise signing.

Figure 9.1 has an example sign where a "branded" route (Avon Cycleway) overlaps with a National Cycle Network route and a regional cycle route.

In addition to currently prescribed signs, a set of signs and way markers shown in Figure 9.1 have been agreed with the Department of Transport for use on the National Cycle Network.. It is expected that these will be prescribed in the Amendment Regulations in Spring 1997.

Continuity of route information is important and route signs should be placed either side of key junctions and waymarkers provided at intervals appropriate to the route. Existing street furniture should be used wherever possible to locate signs. The objective is to ensure that the National Cycle Network routes can be followed easily, without a clutter of signs. Where appropriate National Cycle Network signs should include key destinations and distances.

At points of focus such as the main accesses to major off-road paths, the main entry points to urban areas and where a number of urban routes join, it is important to display local area cycle route maps. These can be sited in conjunction with cycle parking facilities. In certain locations it may be appropriate to erect tactile maps for blind and partially sighted users.

On off-highway routes the intention is that signing should be sympathetic to the surroundings and therefore a prescriptive approach has not been adopted. However signing should maintain the same standard of clarity and continuity, and must include the route number patches and their colour coding.

In Wales, bilingual versions of traffic signs should be used.

Cycle Parking

Cycle parking should provide security for bikes, convenience for the cyclist and an indication to the public that cyclists are welcomed. To this end, cycle parking should be provided in prominent sites close to entrances of public places and the like, rather than on left over plots at the rear. Parked cycles in highly visible locations will help to reinforce the public's perception that cycling is popular. Small groups of cycle parking stands are preferable to a single group at a central location.

Wherever possible the parking should be in view of the building's entrance such that it benefits from casual as well as formal surveillance.

Cyclists may choose to use conveniently sited street furniture such as railings and tree guards. This should not be seen as a substitute for the provision of cycle parking stands, and care should be taken to avoid obstructing footways.

For short and medium stay cycle parking in locations under easy surveillance the Sheffield stand or wall loops should be sufficient. There are situations where consideration should be given to more secure long stay cycle parking where surveillance is more of a problem. Cycle parking at railway and bus stations and at large leisure facilities where a cyclist may not wish to remove panniers may fall into this category, although for regular users "toast racks" of Sheffield stands are often more appropriate. Where greater security is required, consideration should be given to providing cycle lockers. These enclose the cycle completely and can be locked with the cyclist's own 'D' lock.

Access Barriers

There should be a presumption against the use of any access barriers on cycle tracks/footpaths because of the difficulties they can cause for users. It is acknowledged that there will be situations where access barriers in some form will be required, but it is important that the level of restriction provided by the access barrier be as low as possible commensurate with the problem to be tackled.

Figure 9.4 shows three levels of access barrier. Bollards provide the least difficulty for all cyclists and wheelchair users to negotiate while the access barrier with wheelchair bypass will force cyclists to -slow down and in many cases stop and will be particularly difficult for tandems, tricycles and cycles with trailers to negotiate. Where there is a perceived problem with motorcyclists, only part of the full barrier should be installed in the first instance, narrowing the access. The remainder should only be installed if there is a problem after completion of the route.

It should always be borne in mind that a high level of usage is the best form of deterrent when considering issues such as motorcycles, fly tipping and occupation by caravans.

Coloured Surfaces

Coloured road surfaces can be used to draw attention to highway features. However, they do not convey meaning, which is the role of traffic signs and road markings.

The use of colour to increase the prominence of cycle facilities can:

improve safety encourage compliance with traffic regulations raise the profile of cycling reinforce route continuity and make route finding simpler, thus potentially reducing the number of signs required.

It is recommended that cycle facilities be coloured at the following locations:

advanced stop line reservoirs and approach lanes locations where there is potential for conflict with motor vehicles at points where cycle tracks join the carriageway cycle lanes along heavily trafficked roads locations where there is a need to highlight the presence of a cycle track to pedestrians. (Note that it cannot be relied on as a sole means of segregation).

The colours most commonly used for cycle facilities are red or green. DOT authorisation is not required for colouring road surfaces. It is important that National Cycle Network facilities blend with sensitive physical environments.

The materials most commonly used to achieve a coloured surface are:

- thermoplastic paint - resin based materials with coloured chippings - slurry seal.

In choosing a particular material the following factors will need to be considered:

- skid resistance (minimum PSV 50) - adhesion to existing surface - colour retention - durability requirements of location - cost - quality of ride (comfort).

Other materials which have been used are road paints and coloured tarmac. Coloured tarmac produces more muted colours and is more appropriate for new construction.

Thermoplastic paint is recommended when it is machine laid in a 3mm thick coat with a high aggregate content to provide good skid resistance. The use of thermoplastic sheet has been successful in some situations but is expensive.

Resin based materials (epoxy or polyurethane) with coloured chippings are the most expensive form of coloured surface. It is recommended that naturally coloured chippings be used as there will be no colour loss with wear. The screed can be coloured to enhance the colour contrast.

Slurry seal is the cheapest material but is not recommended for on-road use primarily because of problems of colour retention and durability.

Maintenance

When designing a cycle route it is important that maintenance costs are included in the assessment of scheme options. All aspects of construction have maintenance costs associated with them whether sweeping, hedge/grass cutting, cleaning, replacing, repairing, resurfacing, re-painting, unblocking or reconstructing.

Good design will help to reduce maintenance costs. Due to their restricted width, a high standard of reinstatement is essential when any works are undertaken within a cycle track or lane, retaining an even surface for cyclists. Repairs and reinstatement must be done in sympathetic materials.

Lighting

In general lighting will be required on routes used for commuting, which will tend to be associated with urban areas where carriageways and footways are already lit.

Lighting should normally conform to the requirements of BS5489 and care should be taken to minimise its effect on local properties. The National Cycle Network should not encourage unnecessary lighting.

Care must be taken to locate lighting columns clear of the path so that they do not cause obstruction to users.

National Route Direction Signs - Figure 9.1

Notes

1. 'x' - heights of cycle signs can vary between 30-60mm. The 30mm 'x' -height will be prescribed in the Amendment Regulations to be issued in Spring 1997. An exception to this is the waymarker signs where the 'x'-height is 24mm.
2. The signs detailed are primarily direction and information signs intended for use by cyclists and not particularly relevant to motorists. The 30mm and 35mm 'x'-height will normally be adequate. The DOT advise that the 30mm 'x'-height is used for off-road routes, and a minimum of 35mm on road. However, care should be exercised when using a small 'x'- height for on-road situations, particularly in the urban environment where legibility, conspicuity and safety may require a larger 'x'- height at important signing locations.
3. It is expected that the signing detailed opposite will be prescribed in the Amendment Regulations in Spring 1997. Prior to this, authorisation will be required.
4. Normal principles of sign design apply and Transport Medium Alphabet shall be used.
5. The rectangular sign with the directional arrow (straight ahead) is an advanced direction sign for use prior to reaching a junction. The arrow may be varied to point left or right, or be inclined left or right. The flag signs (left and right turn options) are for use at the junction.
6. The signs detailed are to supplement the signs required and prescribed within the Traffic Signs Regulations and General Directions.
7. National Cycle Network route numbers are to be white on a red background.
7. Regional route numbers are to be white on a blue background.
9. Dimensional drawings to enable these signs to be manufactured accurately are given in Appendix 111.

References

1. Local Transport Note 2194: Directional Information Signs - Interim Design Note

National Route Direction Signs – Figure 9.1



Route To National Cycle Network



National Route Turn Left Here



National Route Straight On at Junction Ahead
(Direction of arrow may be varied, see note 5)



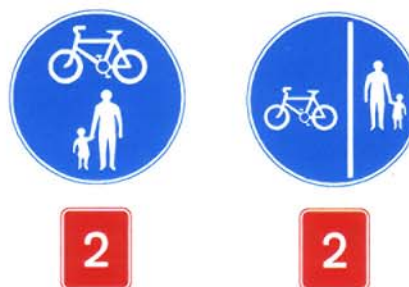
National Route Waymarker



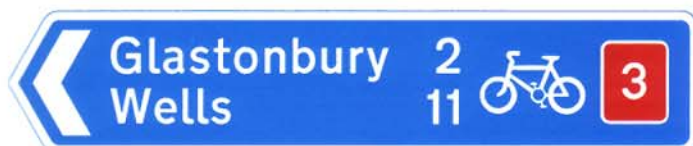
Tourist Destination



Recommended Route



Diag No. 956 and Diag No. 957
with route number patch plate
added on same post



Recommended Route Alternative Layout



Regional Route Turn Right

Regional Route Direction Signs

Note: All national route direction signs can be used as regional route direction signs by replacing the red patch number with a blue patch number as above

Tactile Marking for Segregated Facilities - Figure 9.2

Notes

1. In urban areas where pressure on facilities is greater and where there are significant numbers of vulnerable pedestrians (disabled, blind and partially sighted and aged) complete segregation by means of dedicated cycle track or a level difference between the footway and a cycle track should be the aim of the highway authority, particularly in new developments. Where it is not feasible to achieve segregation by either of those means then segregation should be achieved by the use of tactile surfacing and raised white line delineator (Diag No. 1049. 1). A 20mm height is recommended for this.
2. The DOT Mobility Unit has commissioned a research project to re-evaluate the raised white line delineator (Diag No. 1049. 1) and to look at alternatives. It is anticipated that this report will be available in 1997. Up-to-date guidance in the use of the raised white line delineator should be obtained from the DOT.

References

1. Traffic Advisory Leaflet 4/90: Tactile Markings for Segregated Shared Use by Cyclists and Pedestrians
2. Local Transport Note 2/86: Shared Use by Cyclists and Pedestrians (S)
3. Disability Unit Draft Guidance Note: Guidance on the Use of Tactile Paving Surfaces
4. Disability Unit Circular 1/91 The Use of Dropped Kerbs and Tactile Surfaces at Pedestrian Crossing Points

Examples

There are numerous examples of these facilities

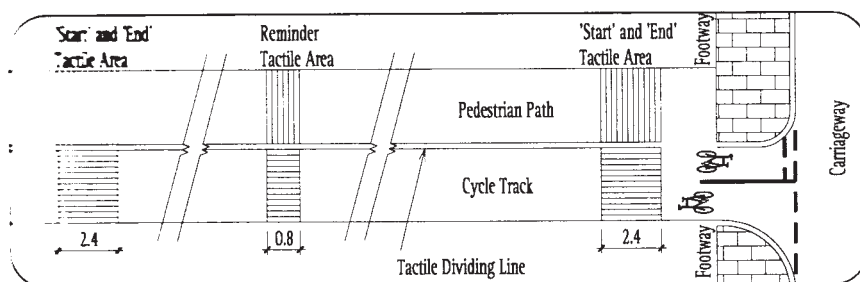
1. YORK: Water End

(York City Council)

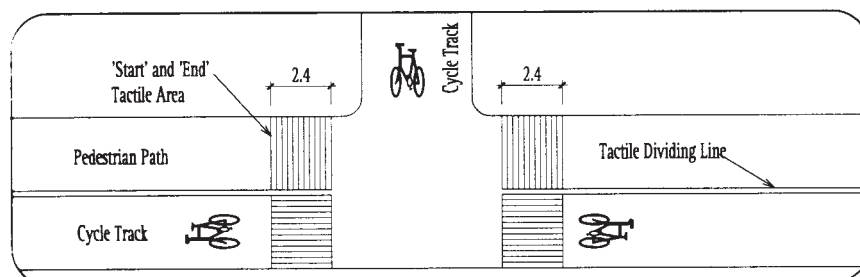
2. COVENTRY: Tile Hill Lane

(Coventry City Council)

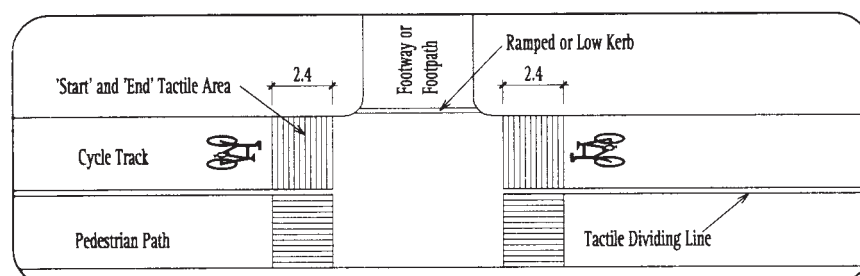
Tactile Marking for Segregated Facilities – Figure 9.2



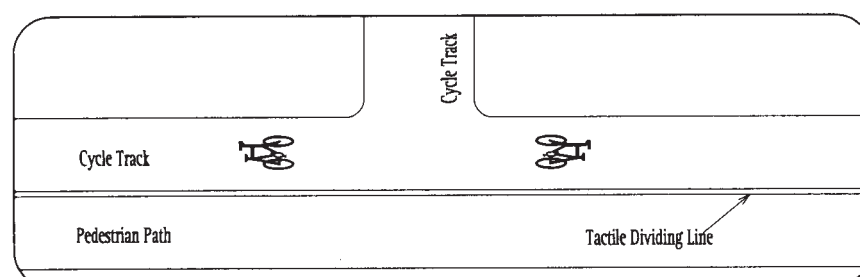
1. Shared Cycle Track/Pedestrian Path showing different end treatments



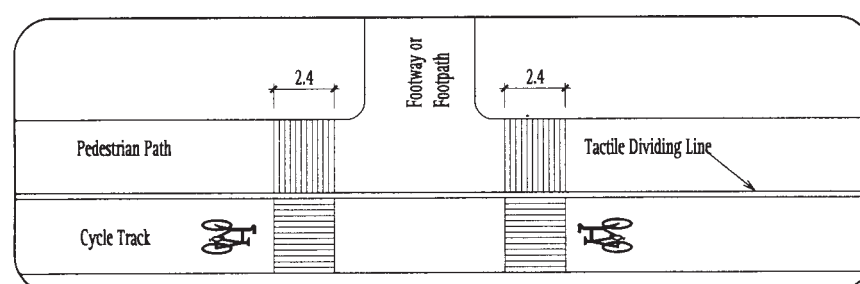
2. Junction where a Cycle Track crosses a Footway or Footpath



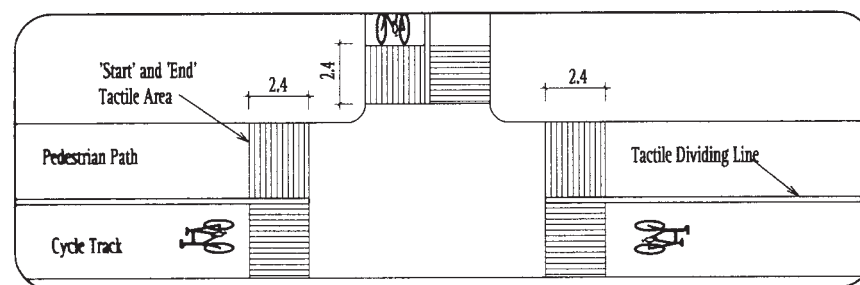
3. Junction where the Footway or Footpath crosses a Cycle Track



4. Junction with a Cycle Track



5. Junction with a Footway or Footpath



6. Junction with a Segregated Cycle Track/Pedestrian Path

Cycle Parking - Figure 9.3

Notes

1. Sheffield stands enable cyclists to secure both frame and wheels to the stand.
2. A minimum gap of 0.8m should be left between stands to allow two cycles per stand. If a narrower gap is used, capacity may be reduced.
3. All steelwork to be provided with adequate corrosion protection.
4. Street furniture should be utilised for parking cycles wherever appropriate eg. railings and tree guards. Cycle parking sign Diag No. 968 may be fixed to the relevant street furniture. Care should be taken to avoid obstructing the footway. This should not be seen as a substitute for the provision of cycle parking stands.
5. Parking facilities should be conveniently located, secure, easy to use, adequately lit and well sign posted. Weather protection should be considered.
6. Generally, parking should be placed within a populated, well supervised area and as close to amenity locations as possible.
7. Wall bars are an alternative fixing device which may be considered where there is limited pavement available for a Sheffield Stand. Hitching rings or loops are a form of wall bar which may have aesthetic attraction at some locations.
8. A minimum spacing of 1800mm for wall bars will allow one cycle per wall bar. If the number of wall bars is increased then this will allow more locking options for the cyclist.
9. The use of single wheel holders provides less security and can cause damage to cycles.
10. In rural areas or at historic sites, the standard Sheffield stand as shown may be intrusive. In such circumstances an equivalent degree of security can be provided by stands based on the same principles but of a form more in keeping with the location.

References

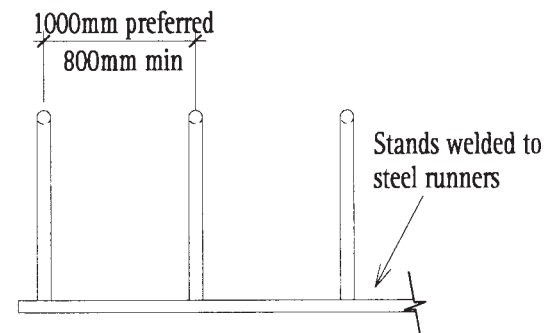
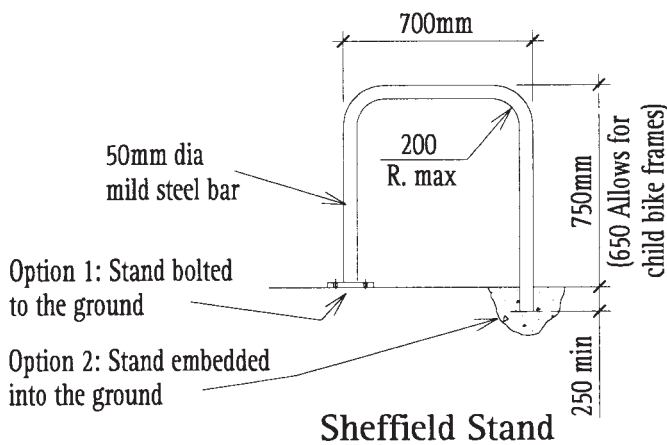
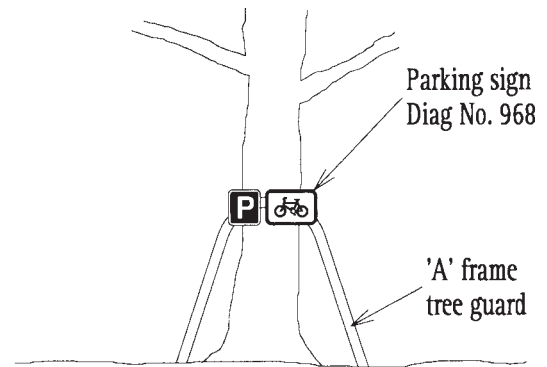
1. Local Transport Note 1/89: Making Way for Cyclists (S)
2. CTC Technical Note - Cycle Parking

Examples

1. BRISTOL: Broadmead Shopping Area
(Avon County Council)
2. BULWELL, NOTTINGHAM: Leen Valley Path
(Nottinghamshire County Council)
3. OXFORD: Oxford Station
(Oxfordshire County Council)
4. NOTTINGHAM: Queens Medical Centre (700 spaces)
(Nottinghamshire County Council)
5. BIRMINGHAM: Aston University
(Aston University)
6. OXFORD: St Aldates (hitching rings)
(Oxfordshire County Council)

Cycle Parking – Figure 9.3

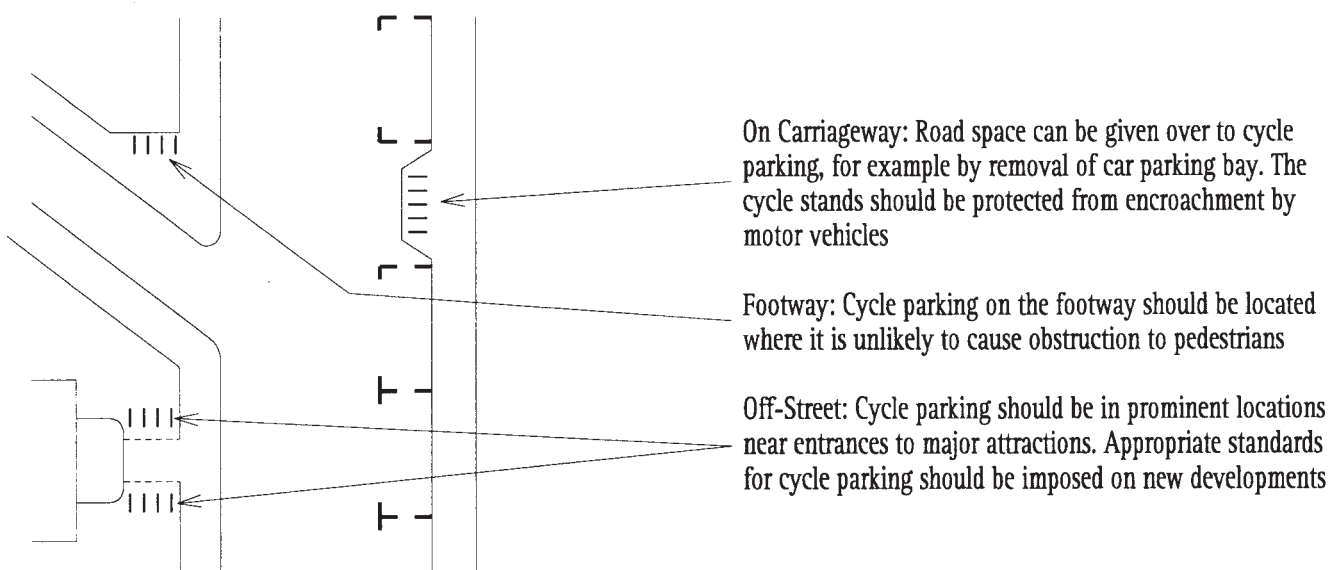
Street Furniture: Where suitably located, this can be a most convenient form of cycle parking, e.g. railings and tree guards. Its use should not cause obstruction to pedestrians. Sign Diag No. 968 should be fixed to the relevant street furniture



"Toast Rack" of Sheffield Stands

Wall Bars and Hitching Rings: These should be considered where cycle parking is to be provided alongside a wall or the side of a building, where there is limited footway space. The fixing should be embedded in the wall at about 750mm above ground level

Bicycle Size: The space required for a parked bicycle may be taken as 1.8m length and 0.6m width across handle bars



Access Barriers - Figure 9.4

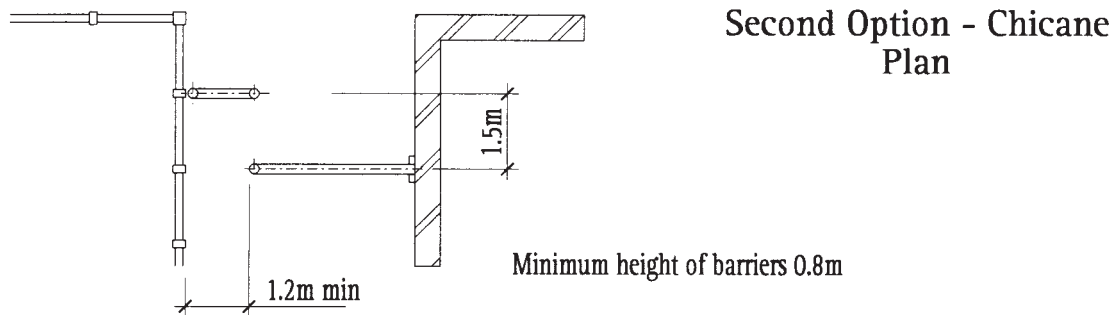
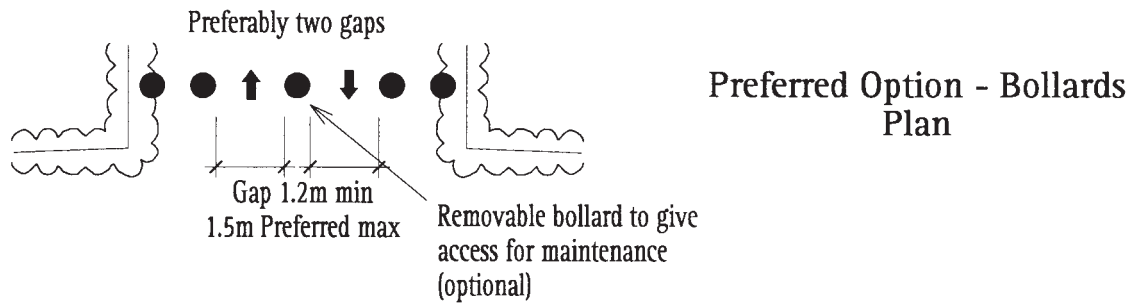
Notes

1. The access on to a cycle track/footpath should be well designed and will sometimes require security of access combined with a feature entrance. Barriers are generally inconvenient to regular users and cause difficulty for certain types of cycle and for wheelchair users. Bollards should be the first choice to discourage access by motor vehicles. If motorcycles subsequently become a nuisance then more restrictive forms of barrier should be considered. Heavy use by cyclists and pedestrians should help deter unauthorised use.
2. In urban areas there will be frequent access points and provision of complex controls will be expensive and restrictive and deter cyclists. In these areas simple gaps 1.2m wide may suffice as deterrents to motorcycles. A width of 1.2m is sufficient to allow access for the largest types of cycle currently used by people with disabilities.
3. Wheelchair users negotiating the access barrier may need to swing under the barriers when turning. The barriers on the wheelchair bypass should therefore comprise a single rail with a 700mm clearance to the ground. Fences/walls etc adjoining the wheelchair bypass must meet it at one of the corners, and free space to a distance of 450mm outside these rails should be provided.
4. Maintenance vehicle access points are not needed for vehicles to travel the whole length of the cycle track/footpath. Access to points along the path are all that is necessary. This can be achieved by the occasional access gate to the side of the path.
5. The barriers in the detail are shown constructed in tubular steel, however they may be constructed using local or reclaimed materials in keeping with the area, subject to maintaining the clearances required. The bollards too should be constructed to enhance the environment.
6. All steelwork is to be provided with adequate corrosion protection.
7. Consideration must be given to the visibility of bollards and barriers so that they do not cause a hazard to path users. The use of high visibility paints or signs may be necessary.
8. The details shown here do not preclude the use of innovative design for access barriers which meet the philosophy set out in this figure and which may be more appropriate for particular locations eg. pedestrian/ cycle access barrier on the National Trust property at Clumber Park, Nottinghamshire. Sustrans are able to advise on further designs such as large wicket gates and cattle grids.

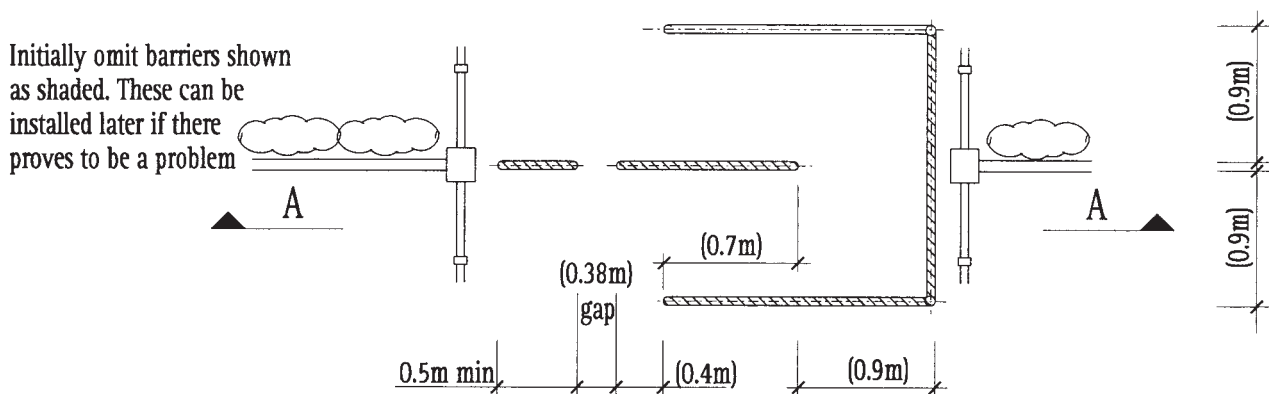
References

1. Local Transport Note 1/86: Cyclists at Road Crossing and Junctions (S)
2. Making Ways for the Bicycle: A Guide to Traffic-Free Path Construction - Sustrans
1. YORK: New Walk Cycle Route
(York City Council)
2. BRISTOL: Avon Ring Road/A431
(Avon County Council)
3. CANTERBURY: Rheims Way Subway
(Kent County Council)
4. OXFORD: University Parks
(Oxfordshire County Council)
5. CAMBRIDGE: Regents Street/Parkers Piece
(Cambridgeshire County Council)

Access Barriers – Figure 9.4



Third Option - Barrier (With Wheelchair Bypass) Plan



Height may be raised to 0.5m where scramble motor cycles are foreseen as a problem

Adjacent boundary

Minimum 150mm concrete foundation

Dimensions bracketed are essential for the effective operation of the barrier

Appendix 11
Crossing Site Assessment Record Sheet

This check list and record sheet is recommended for use when assessing the need for an at-grade cyclist/pedestrian crossing or changing an existing cyclist/pedestrian crossing for another type. It should be supplemented by photos and key features should be recorded on a map.

Site Characteristics

1. 1 Site Location	Description Ordnance Survey Grid Reference	
1.2 Carriageway Type	Single One Way Number of lanes Cycle lanes/tracks Gradients	Double Two Way
1.3 Carriageway Width		metres
1.4 Cycle Lane/Track Width	Side 1 Side 2	metres metres
1.5 Footway Width	Side 1 Side 2	metres metres
1.6 Refuge Island Width		Yes No metres
1.7 Road Lighting Standard		
BS5489 classification		Category
Is lighting to above standard?		Yes No
Any re-arrangement necessary?		Yes No
Better lighting standard needed?		Yes No
Supplementary lighting needed?		Yes No

1.8 Minimum Visibility			
Cyclist/pedestrian to vehicle	Direction 1	metres	
	Direction 2	metres	
Vehicle to crossing	Direction 1	metres	
	Direction 2	metres	
1.9 Waiting/Loading/Stopping Restrictions			
At prospective site		Yes	No
Within 50 metres of the site		Yes	No
1.10 Public Transport Stopping Points			
At prospective site		Yes	No
Within 50 metres of the site		Yes	No
Relationship to crossing [in direction of travel]	Direction 1	approach/exit	
	Direction 2	approach/exit	
1.11 Nearby Junctions			
Distance to nearest significant traffic junction	Direction 1	metres	
	Direction 2	metres	
1.12 Other Cyclist/Pedestrian Crossings			
Distance to next crossing	Direction 1	metres	
	Direction 2	metres	
Type of crossing	Zebra/Pelican/Puffin/Toucan/Other		
1.13 School Crossing Patrol			
Distance if less than 100 metres		metres	
1.14 Skid Risk			
Does surface meet skid resistance requirements		Yes	No
1.15 Surroundings (Entrances within 100 metres)			
Hospital/sheltered housing/workshop for disabled people		Yes	No
School		Yes	No
Post Office		Yes	No
Railway/Bus Station		Yes	No
Pedestrian leisure/shopping area		Yes	No
Sports stadia/ entertainment venue		Yes	No

Appendix 11 - Crossing Site Assessment Record Sheet

Junction with cycle route	Yes	No
Equestrian centre or junction with bridle path	Yes	No
Others (for example a Fire Station)		

Crossing Traffic Information

2.1 Flow and Composition

Crossing cyclists	number per - hours
Unaccompanied young cyclists	%
Pedestrian count	number per - hours
Prams/pushchairs	%
Percent elderly	%
Unaccompanied young children	%
Severe mobility difficulties	number per day
Visually impaired	number per day
Equestrians	number per day
Others	number per day

2.2 Time to Cross The Road (Measured Sample)

Able pedestrians/dismounted cyclists	seconds
Mounted cyclists	seconds
Elderly or disabled people	seconds

2.3 Difficulty of Crossing

Able pedestrians/dismounted cyclists	
Mounted cyclists	
Elderly or disable people	

2.4 Latent Crossing Demand

Estimate for cyclists	Unlikely/number per - hours
Estimate for pedestrians	Unlikely/number per - hours

Guidelines and Practical
Details - Issue 2 Appendix li - Crossing Site Assessment Record Sheet
Traffic Information On Carriageway/Footway

3.1 Flow and Composition on Carriageway to be crossed	
Motor vehicle count	number per - hours
Cyclists	number per - hours
Heavy goods vehicles	%
Public service vehicles	number per day
3.2 Vehicle Speed	
85 percentile	m.p.h.
Speed Limit	m.p.h.
3.3 Level of Use of Footways	
Pedestrians	number per - hours
Cyclists	number per - hours

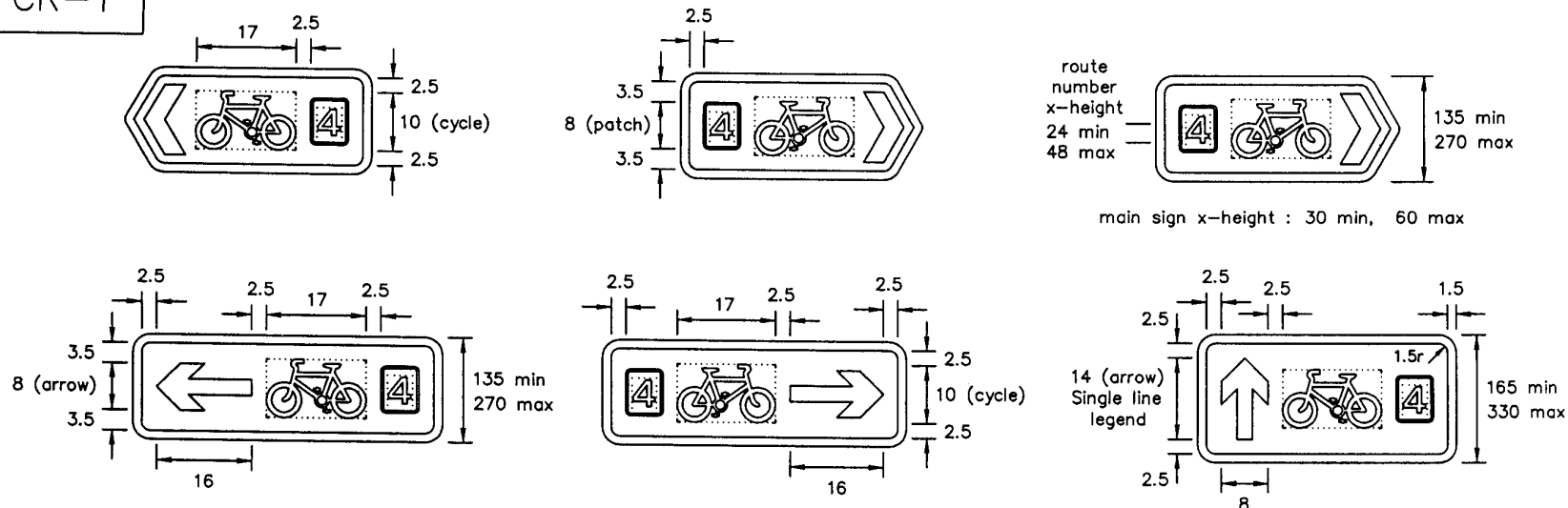
Road Accidents

4.1 Mean Personal Injury Accident Frequency	
Number per year at site (over 5 years if available)	P.I. accidents/year
Number per year at an average local site (over 5 years if available)	P.I. accidents/year

Drawing No.
CR-1

Before using this drawing, confirm that it has not been superseded.

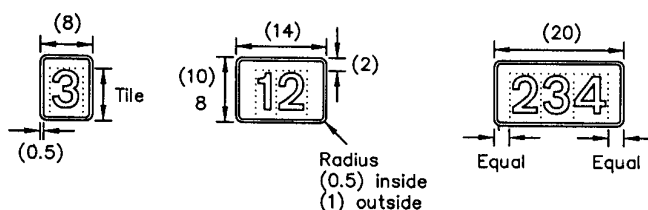
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See Local Transport Note 2/94 for further details on flag type and stack type sign design.

DESIGN OF CYCLE ROUTE NO. PATCH

Unbracketed dimensions are in stroke widths based on x-height of main sign. Bracketed dimensions are in stroke widths based on x-height of cycle route number which is 80% of main x-height.



NOTES

- Characters are from the Transport Medium alphabet.
- Cycle symbol is on drawing no. S 24.
- Tile outlines do not form part of the signs.
- COLOURS: -
Background to main signs ----- BLUE
Legends, borders, arrows & chevrons -- WHITE
Background to route number patches:
National route ----- RED
Regional route ----- BLUE
- X-heights shown are in millimetres and apply to all signs on this drawing. Overall sign heights are in millimetres. Other dimensions are in stroke widths (4 sw = x-height). X-height is the height of the lower case "x". Numeral height = 5.6 sw.

CR-1



Title: Cycle Signs
NATIONAL CYCLE ROUTE

Issue: Date:
A: 2.12.96
B:
C:

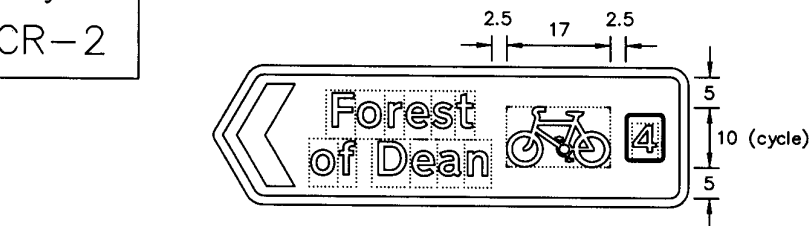
Drawn by:
R.M.
Approved by:
R.M.

Dimensions:
SEE
NOTE 5

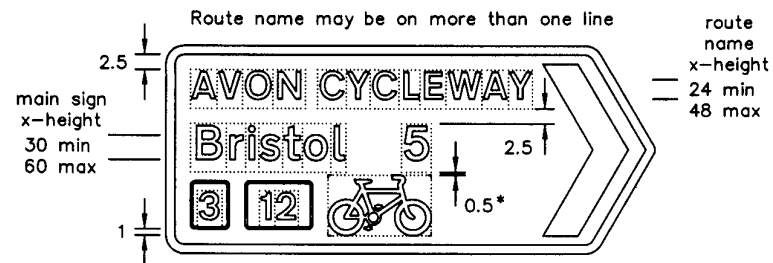
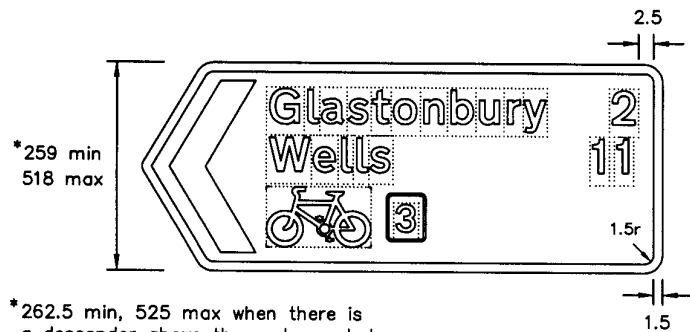
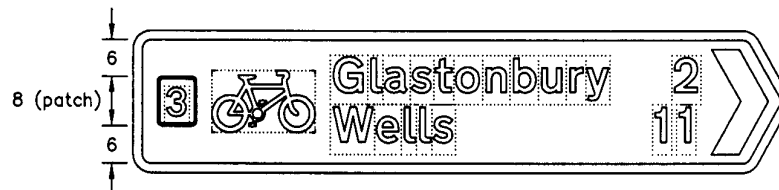
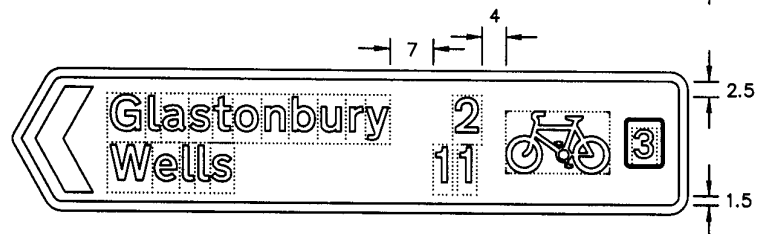
Drawing No.
CR-1

Drawing No.
CR-2

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main sign x-height : 30 min, 60 max



*This dimension is increased to 1 sw when legend includes a descender above the cycle symbol

*259 min
518 max


*262.5 min, 525 max when there is a descender above the cycle symbol

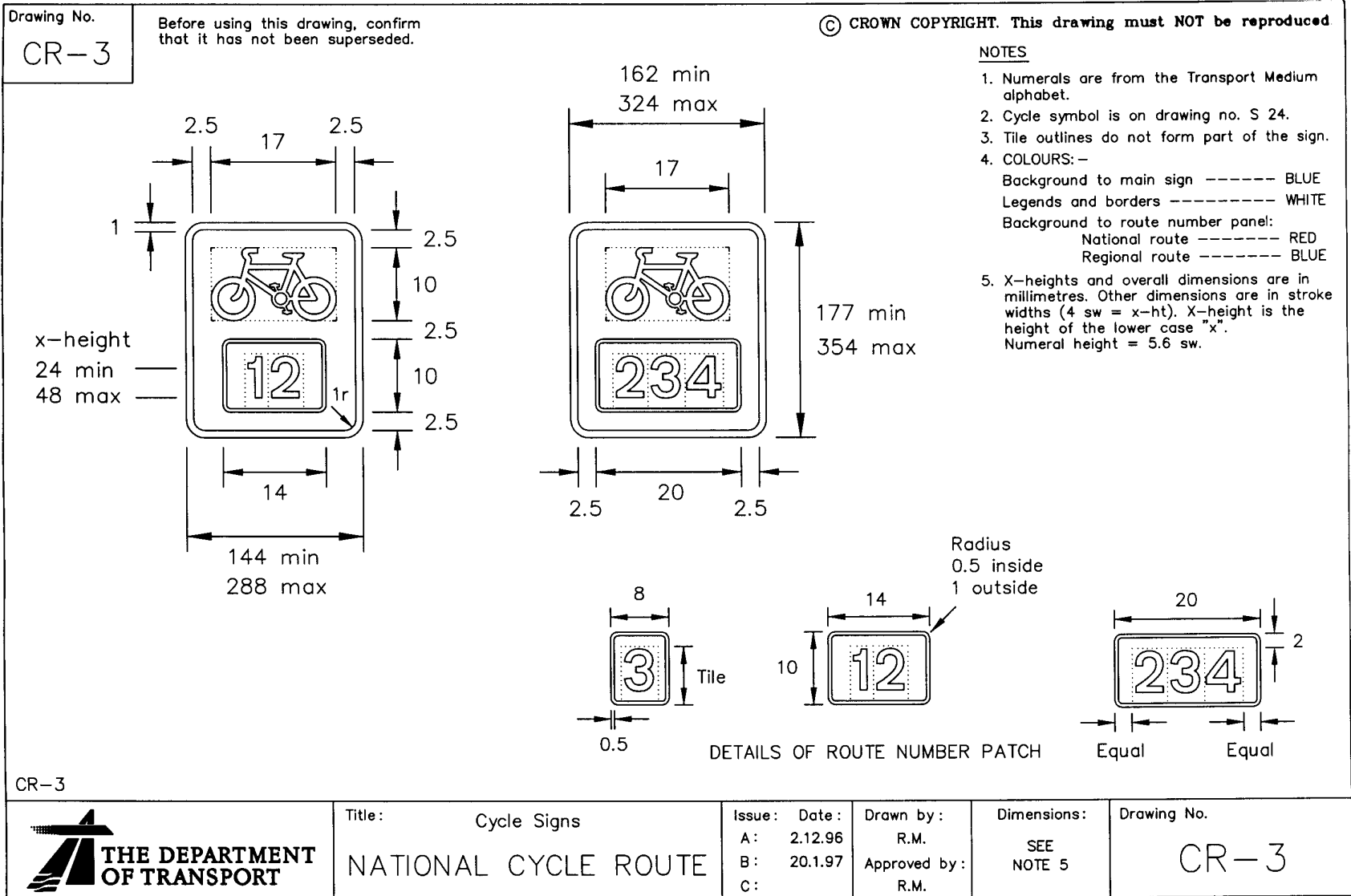
See Local Transport Note 2/94 for further details on flag type sign design and adding distances.

See drawing CR-1 for general notes and details of route number patch.

Before using this drawing, confirm that it has not been superseded.

CR-2

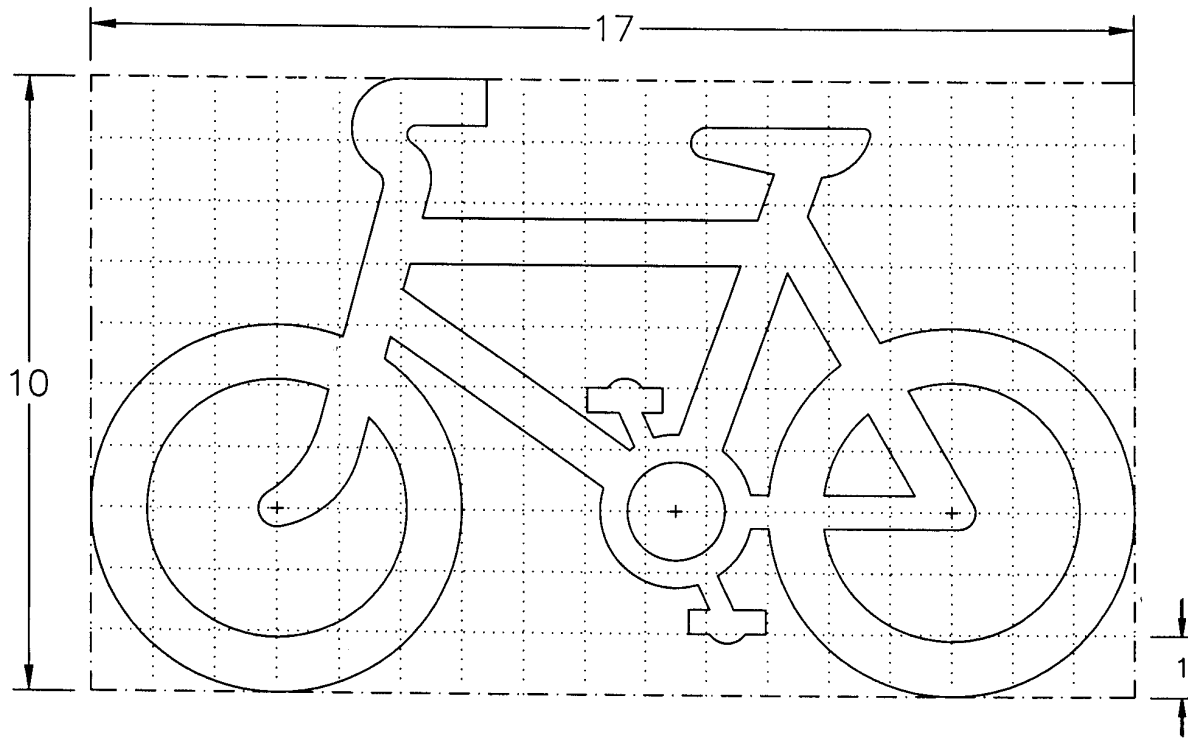
 <p>THE DEPARTMENT OF TRANSPORT</p>	<p>Title: Cycle Signs</p> <p>NATIONAL CYCLE ROUTE</p>	<p>Issue: Date:</p> <p>A: 2.12.96</p> <p>B: 20.1.97</p> <p>C:</p>	<p>Drawn by: R.M.</p> <p>Approved by: R.M.</p>	<p>Dimensions: SEE NOTE 5 ON DRAWING No. CR-1</p>	<p>Drawing No. CR-2</p>
--	---	---	--	---	-------------------------



Drawing No.
S 24

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- NOTES: 1. The grid does not form part of any sign to which the symbol is applied.
2. Dimensions are given in grid divisions, (normally equal to 1/4 x-height)
3. The symbol may be reversed, (item 28, Schedule 16, TSRGD 1994)



S24

Before using this drawing, confirm
that it has not been superseded.

Title: symbol
BICYCLE

Issue: Date:
A: 17.2.94
B:
C:

Drawn by:
S.P.
Approved by:
R.M.

Dimensions:
ALL IN
GRID DIVISIONS

Drawing No.
S 24

Appendix VI

NCN Design and Construction Checklist

Getting the details right will make the difference between NCN infrastructure working well or badly. The aim of this checklist is to encourage good detailed design by systematic reference to detailed design considerations

Design

- 1 Ensure that “effective” width of a cycle track is adequate with ref. to Figure 8.4 - that functional width is not constrained by walls or features alongside paths. ☐
- 2 Ensure that gradients are no greater generally than 3% and no greater than 5% for lengths up to 100m. ☐
- 3 Ensure need for lighting fully considered. There will be a presumption in favour of lighting on sections of the NCN used for commuting within urban areas. ☐
- 4 Ensure that suitable segregation has been considered where the route has combined cycle/pedestrian flows > 100 per hour. ☐
- 5 Ensure that there are connections with local cycle networks and adjacent developments. ☐
- 6 Ensure that all opportunities have been examined for minimising sign clutter by eliminating superfluous signs, consolidating signs, and using the smallest appropriate sign size. ☐
- 7 Ensure that construction design takes into account aesthetic considerations, construction and maintenance costs, suitability for purpose, and construction methods. ☐
- 8 For cycle tracks alongside roads, ensure that minimum 0.5m margin is provided where practicable. ☐
- 9 Do not specify access barriers on a path as a substitute for meeting design standards. ☐
- 10 Consider the possibility of unauthorised motor vehicle access. Normally there will be a presumption against the provision of posts/access controls. See Figure 9.4. ☐
- 11 Try to avoid specifying access controls or barriers which require cyclists to dismount or completely lose momentum. ☐

- | | | |
|----|--|--------------------------|
| 12 | Ensure that there is adequate visibility on the approach to junctions. (See Figure 8.6.) If not, specify signing as set out in Figure 8.6. | <input type="checkbox"/> |
| 13 | Ensure that as far as possible paths emerge at least 20m from any roundabout. See Figure 5.16. | <input type="checkbox"/> |
| 14 | Where paths or cycle lanes emerge onto roads (e.g. at road closure points) ensure that measures are taken to prevent parked vehicles from blocking exits from or entries to such points. | <input type="checkbox"/> |
| 15 | Ensure that measures to reduce traffic flows on the street e.g. through road closures or other traffic management measures, have been considered. | <input type="checkbox"/> |
| 16 | Where the NCN passes through roundabouts or mini-roundabouts, ensure that alternative junction forms have been fully considered. Where mini-roundabouts are retained, ensure single lane entries/exits and physical measures to reduce speeds on the approach to the junction. | <input type="checkbox"/> |
| 17 | Ensure that possibilities for changing priorities at junctions are fully considered, in order to give priority to the NCN. | <input type="checkbox"/> |
| 18 | Ensure that measures introduced to facilitate the NCN do not create physical problems for cyclists or pedestrians crossing the NCN, e.g. build-outs. | <input type="checkbox"/> |
| 19 | Ensure that speed reduction measures do not create problems for cyclists. | <input type="checkbox"/> |
| 20 | Ensure that general traffic management measures do not create problems for cyclists e.g. dedicated left turn lane approach to junctions. | <input type="checkbox"/> |

Construction

- | | | |
|----|---|--------------------------|
| 21 | Ensure that positions of posts, street furniture and ironwork are specified to be in verges and outside the cycle track wherever possible. If this is not possible, ensure that large road signs are supported by two posts close to each other, rather than straddling the path. | <input type="checkbox"/> |
| 22 | Ensure that there are good sightlines i.e. absolute minimum of 20m on flat sections and on slopes 40m. | <input type="checkbox"/> |

- | | | |
|----|---|--------------------------|
| 23 | Ensure that “tunnel” effects are avoided (e.g. as created by high fence or wall adjacent to the path). | <input type="checkbox"/> |
| 24 | Ensure that all angles are rounded (not squared) with an absolute minimum 6m radius of curvature on lengths. | <input type="checkbox"/> |
| 25 | Ensure that “machine” lay is specified on urban routes where total length of construction is more than 200m. | <input type="checkbox"/> |
| 26 | Ensure that adequate headroom at signing is specified i.e. 2.4m. | <input type="checkbox"/> |
| 27 | Ensure that flush dropped kerbs are specified. See Figure 8.6. | <input type="checkbox"/> |
| 28 | Ensure that gully covers do not coincide with junctions. | <input type="checkbox"/> |
| 29 | Ensure that drainage channels are in good condition and gullies do not present a problem for cyclists. | <input type="checkbox"/> |
| 30 | At mid-block signal controlled crossings, ensure the vehicle precedence time is not excessive. | <input type="checkbox"/> |
| 31 | At signalled crossings ensure that push buttons for cyclists are provided on left hand side (in addition to any loop detection). | <input type="checkbox"/> |
| 32 | Where side accesses with poor visibility cross NCN paths, raise awareness of drivers and cyclists to possible conflict. Give consideration to removing features which block inter-visibility. | <input type="checkbox"/> |
| 33 | Ensure that defects in the road surface particularly within 1.5m of the kerb have been identified and rectified. | <input type="checkbox"/> |

Index

Access barriers	147, 156	unsegregated cycle track/footway	48
Access restrictions	109, 118	widths	133, 135, 139
Advanced Stop Lines	38, 78, 80, 82, 84	Cycle track crossings	
Attractiveness of route	26	bridge	88, 136
Balustrades	136	dual carriageway	76
Braided routes	120	give way at minor road	68
Bridge	88, 136	offset from a junction	74
Bridleways	129, 132	priority over minor road	58, 64
Build-outs	21, 68, 96, 99, 103, 105	private access	62
Bus lane	40	staggered at major road	72, 76, 80
		subway	90
		toucan	66, 81, 87
		with refuge island	70, 72, 74, 122
Canal paths	134, 136	Definitions	21
Central refugelisland	70, 74, 96, 100, 122	Design criteria	35, 54, 57, 116
Changed priorities	58, 62, 64, 109	Directness	26
Chicane	96, 100	Disability	152, 156
Clearances	91	Dropped kerbs	142
Coherence	25		
Coloured surfacing	21, 55, 147	Edge of carriageway markings	114
Comfort	27	Elephant footprints	21, 80, 82
Construction		Entry treatment	96
block paving	143	Environmental improvement	97
materials	141		
typical details	143	False one-way streets	104
Consultation	19	Footway bendout	70
Crossing options	54, 116		
Cycle bypass	84	Gated roads	109, 118
Cycle exemptions	102, 104	Gateways	112
Cycle gaps	98, 100, 102, 104	Geotextiles	134, 140, 143
Cycle lanes		Grade separation	55, 88, 90
across minor road	60	Gradients	88, 90
advisory	42, 46, 109	Green Lanes	129
contra-flow	44, 46		
mandatory	40	Hills	100, 120
rural	109, 114, 120, 124		
segregated	46, 72, 82	Jug handle	103, 104
two-way	72, 82		
widths	44, 72	Lighting	149
within bus lane	40	Loading and parking	35, 42, 46, 72
with parking/loading	42, 46		
Cycle parking	147, 154	Maintenance	148
Cycle tracks		Mini roundabouts	56, 96
joining and leaving carriageway	50	Minor road closures	102, 109, 118
routes over hills	120	Monitoring	27
segregated cycle track/footway	48, 138, 152		
shared bridleway	132	National Byway	110
unsegregated cycle track/footpath	132, 134		

Guidelines and Practical Details - Issue 2

Index

Optical width measures	96
Over-run areas	96
Parapets	88
Parking (cycles)	147,154
Parking and loading	35,42,46,72
Pedestrian areas	30,130
Pinch points	96,100,124
Priority system	96,100
Public Spaces	130
Reallocation of road space	37,38
Reduced lane widths	38
Revetment	134
Right turn facility	45, 103, 104
Road closures	102, 109
Road humps	58,64,95,98
Roundabouts	55,86
Roundels	114
Rumble strips	96
Rural road crossings	116, 122
Rural traffic calming	97, 108
Safety	25
Shared use routes	
segregated	48,129,138,152
unsegregated	48,129,132,134
Signal controlled junctions	55,78,80,82,84
Signalised roundabouts	56
Signal timings	55
Signs and markings	20,146,150
Speed cushions	95,98,101
Speed/flow criteria	36,55
Speed limits	108,114

National Cycle Network

Subway	90
Surfacing (coloured)	21,55, 147
Tactile markings	20,66,138,152
Thumps	96
Toucan crossing	66,81,87
Traffic calming	
access restrictions	109,118
build outs	96,99
central islands	96,100
chicane	96,100
entry treatment	96
environmental improvement	97
false one-way streets	104
gated roads	109, 118
gateways	112
mini roundabouts	56,96
minor road closures	102, 109,118
optical width measures	96
over-run areas	96
pinch points	96, 100,124
priority system	96,100
road humps	58,64,95,98
rumble strips	96
rural measures	97,108
speed cushions	95, 98, 101
thumps	96
Underpass	90
Vehicle restricted areas	30,130
Visibility	55, 70,143
Wheeling ramp	88