

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

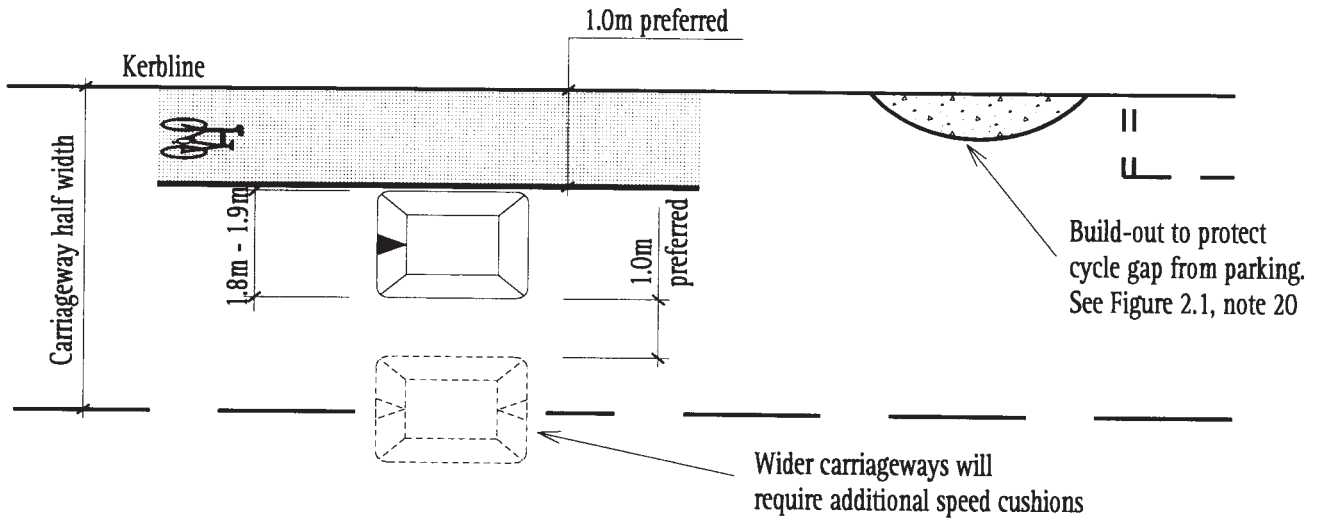
Examples

EDINBURGH: Grange residential area
(Edinburgh City Council)

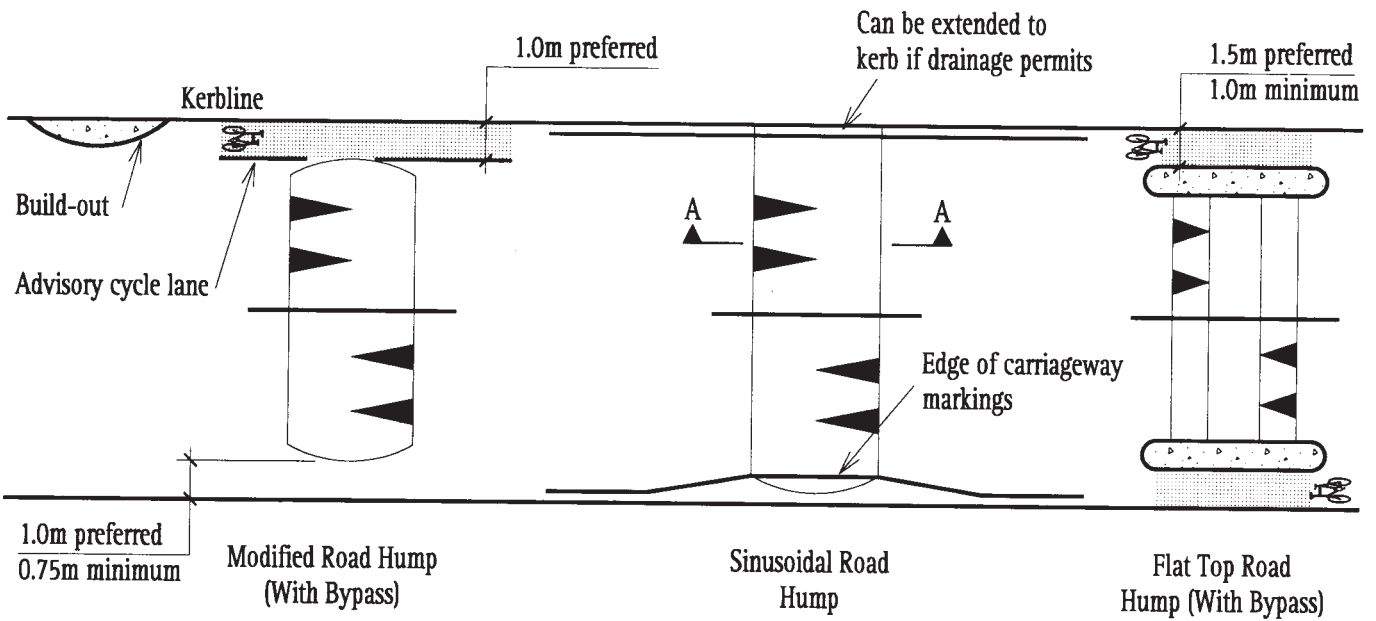
2. **BIRMINGHAM:** Valentine Road etc, Kings Heath
(Birmingham City Council)

3. **BRADFORD:** Scotsman Road
(Bradford City Council)

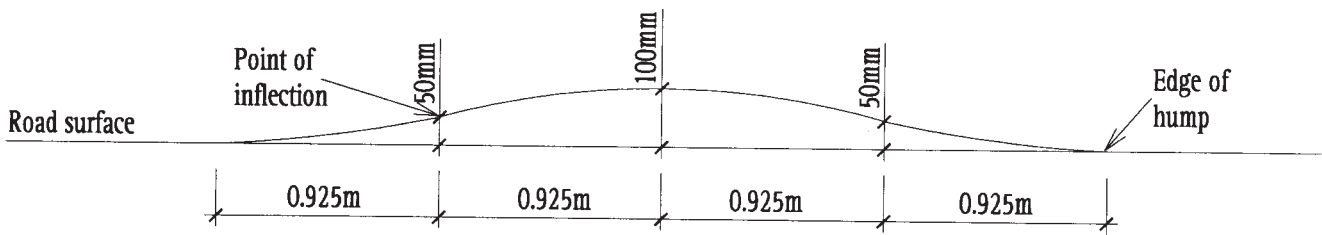
Road Humps/Speed Cushions - Figure 6.1



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

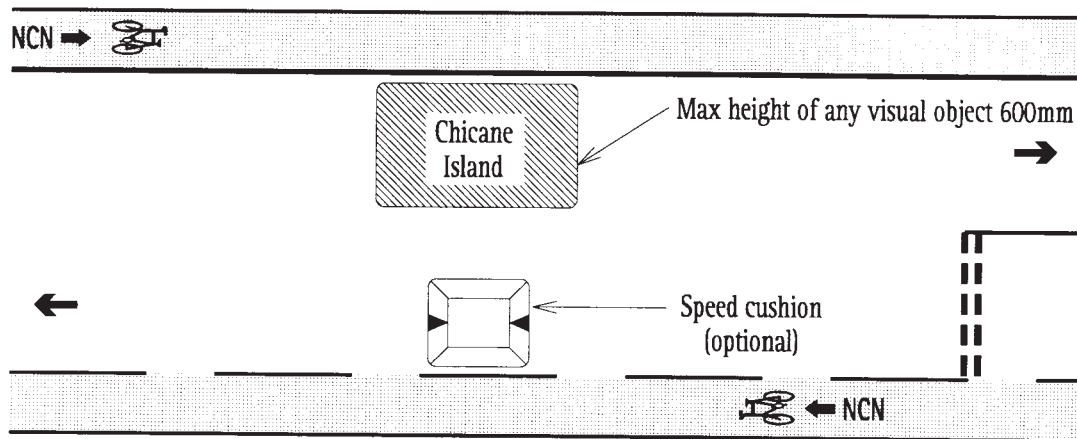
5. It is recommended that central islands only be used to cater for particular pedestrian crossing movements.
6. Where the 85 percentile speed of motor vehicles is less than 30 mph and the vehicle flow is light then a maximum carriageway width of 3.0m is recommended. Where the motor vehicle speed is 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

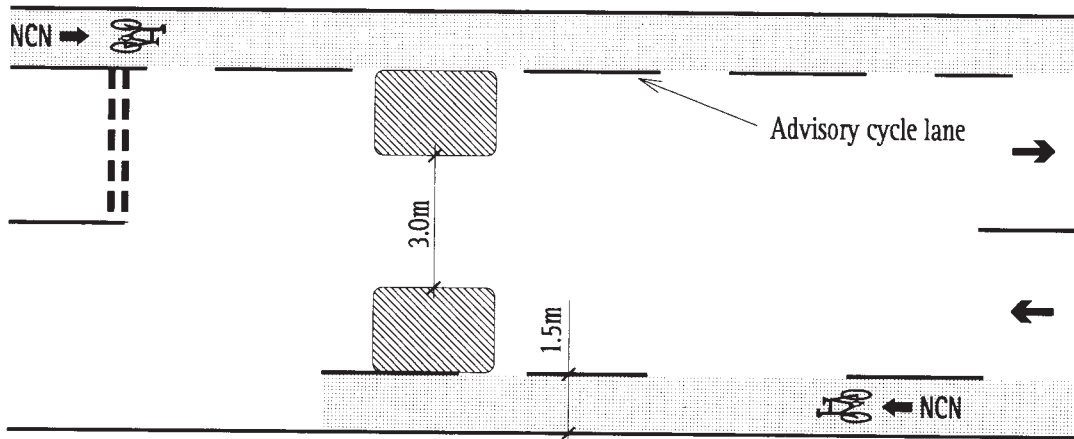
1. Traffic Advisory Leaflet 9/94 Horizontal Deflections Traffic Advisory Leaflet 7/95 Traffic Islands for Speed Control
3. Traffic Advisory Leaflet 7/93 Traffic Calming Regulations (S)
4. Traffic Advisory Leaflet 3/93 Traffic Calming Special Authorisation
5. Highway (Traffic Calming) Regulations 1993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

Examples

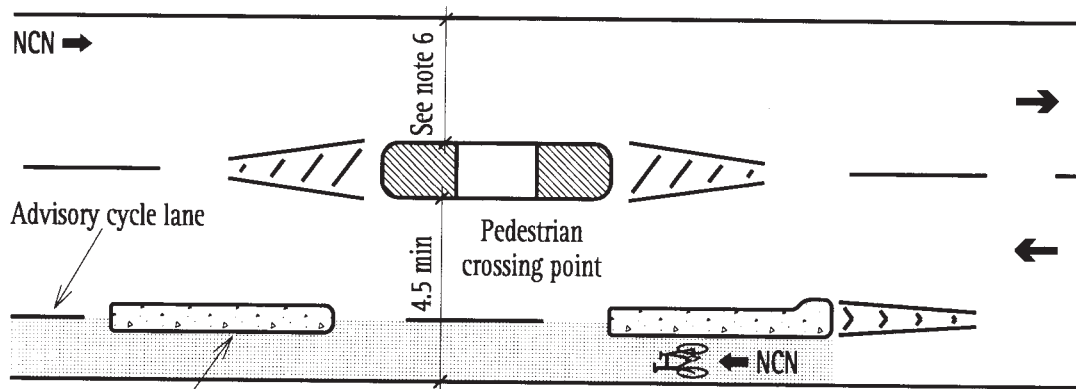
1. BATH: The Hollow Cycle bypass at priority system (Avon County Council)
2. NOTTINGHAM: Cricketfield Road Central island with speed cushion (Nottingham County Council)
3. WOKINGHAM: Rose Street Offset central refuge (Berkshire County Council)
4. WANDSWORTH: Burntwood Lane Protected cycle lane at chicane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



Priority System - Single Chicane



Priority System - Pinch Point



Kerb provided to prevent vehicles encroaching on cycle lane

Central Island

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.

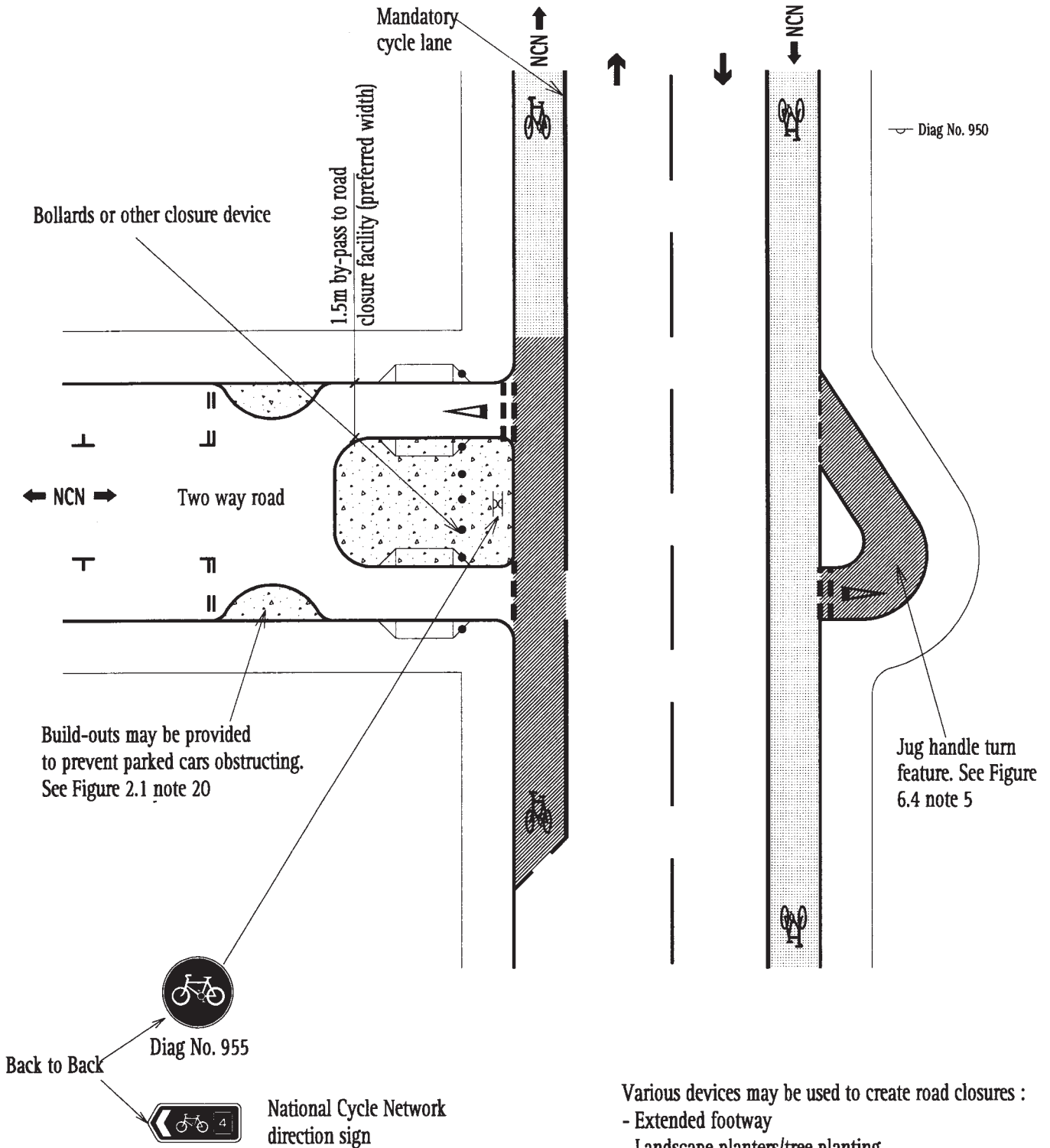
References

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

