The federation of cycle campaign groups

CAMPAIGN FOR HIGH STANDARDS

Sights must be higher to raise the quality of cycling

Cycle facilities and other measures to boost cycling are being introduced in Britain as never before. Government has confirmed its commitment to triple cycle use by 2010 and most local authorities across the country have some sort of pro-cycling policy with schemes on an order paper with increasing regularity.

But whilst the *quantity* of cycling infrastructure is ever increasing, the average *quality* of what is provided remains abysmally low. Many highway authorities still put most of their cycling budget into moving cyclists onto footways and other shared-use paths, which are problematic enough for people on foot, let alone for someone moving five times faster.

As the limitations of this approach become apparent, so narrow cycle lanes are becoming *la mode*, giving cyclists less space than ever before, as traffic rushes by on its new bike-free allocation of tarmac, passing faster and closer because its way ahead is now clear.

Minimum standards have become the norm and the DETR/IHT guidelines – the closest there is to decent objective standards for cycling – are too often dismissed as 'pie in the sky' in a congested urban environment.

Feedback suggests that an increasing number of cyclists are becoming disgruntled about the deterioration in the cycling environment. Roads that were tolerable, if not exactly pleasant, before cycle schemes were introduced have become much less acceptable with narrow cycle lanes added.

There is also evidence of increased aggression from those drivers who expect cyclists to keep out of their way if any separate facility is provided. Compromises in quality are not going to attract people out of their cars onto bikes.

Some local authorities acknowledge that cycle schemes are often criticised, even when they have been 'approved' by the local cycling group. Many campaign groups don't like much of what they get, but feel reluctant to complain too loudly lest they get nothing at all. Alas, not rocking the boat has a poor track record of gaining meaningful improvements.

CCN News is launching a Campaign for High Standards, believing that cyclists deserve decent places to ride, quality facilities where these are to be provided, and, above all, treatment with dignity and respect. We're taking a leaf out of the road lobby's book: compromises in standards are unacceptable.

Groups and individual campaigners are encouraged to take a firmer line against low standards, and to recognise the justification – often in safety as well as attractiveness – for demanding that high standards are commonplace and not the exception.

Over the next few issues, *CCN News* will be highlighting various options for cycling, setting out the standards that exist, explaining the basis on which they have been derived, and what the likely effects of not meeting them might be. We start with the focus on cycle lanes.

CYCLE LANES

Description An area along the side of a carriageway marked out for use by cyclists.

Design variations Cycle lanes may be mandatory or advisory. Mandatory lines are marked with a continuous white line, advisory lanes with a broken white line.

Advantages May assist cycle movement along congested streets. Cycle lanes may also encourage use of a road by new or less confident cyclists (but possibly with a false sense of safety).

Safety Cycle lanes rarely have a safety benefit. Research suggests that a well-implemented cycle lane in an urban area typically increases risk by about 10 per cent compared with no segregation. Narrow lanes increase risk more, as evidenced from the poor safety record of narrow lanes in Belgium and Germany.

The Law Mandatory cycle lanes are legally prohibited to motor traffic (sometimes with exceptions) through a traffic regulation order. Cyclists are not required to use a mandatory lane, but this is not well understood by drivers. Advisory lanes do not require a traffic order and may be entered by motor vehicles when necessary and safe to do so.

Standards DETR/IHT recommends a minimum width of 2m wherever possible, with an absolute minimum of 1.5m. If there are more than 150 cyclists in the peak hour a width of 2.5m is suggested.

Other countries Lane widths typically in range 1.5m minimum to 3m desirable.

Basis of standards On a free-flowing road, an astute cyclist will typically ride at 0.75m from the edge. As a rule of thumb on urban roads, traffic gives a cyclist as much clearance as the cyclist rides from the edge, thus 0.75m. Add to these distances the oscillating width of a cycle, 0.5m, and the total space required is 2m. For safety when a cycle lane is present, all this space must be available within the lane, for drivers frequently drive up to, if not over, the lane marking rather than relative to the position of the cyclist. The 1.5m relaxed standard is simply a concession to the fact that there is insufficient room on most roads for lanes 2m wide.

Common problems:

Narrow lanes: An inevitable consequence of the relaxed standard of 1.5m is that many cyclists will receive less clearance than on an unsegregated road, and their safety will be impaired. Inexperienced cyclists and those who ride fast will suffer first. Lane widths of less than 1.5m reduce safety to an unacceptable level for all cyclists, leaving no 'escape room' in an emergency, with additional danger if the lane is obstructed or if there is a cross-wind.

Insufficient safety zone at side roads: Cyclists should never ride close to the give-way lines across side roads, which is one of the most likely places for a crash. Unless risk is to be increased significantly, there should be a clear space of at least 3m between give-way markings and a cycle lane. Coloured surfaces may help to highlight a cyclist's presence, but used alone give the cyclist no greater margin for error. Narrow lanes make a cyclist very vulnerable to left-turning cars.

Insufficient distance from parking bays: Cyclists are vulnerable to car doors being thrown open and people moving out between parked cars. Cycle lanes must always be at least 1.5m clear of parking bays.

Effect on motorists May drive faster as well as closer to cyclists if they perceive a clearer road. Most drivers expect cyclists to use cycle lanes; some react aggressively towards those who don't.

Defensive action When lanes are narrow, riding the lane stripe will give more room for manoeuvre and may encourage motorists to pass with extra clearance. Where there is insufficient clearance at side roads and parking bays, get out of the lane.

The Cyclist Inferiority Complex

George Bernard Shaw wrote: *"Take care to get what you like or you will be forced to like what you get".*

More recently, in the USA, John Forester coined the phrase 'Cyclist Inferiority Complex' to describe the way that an emotional fear of traffic and the low self-esteem of many cyclists lead people to accept solutions that are counter-productive to the effectiveness of cycling and boosting safety.

The road lobby, and campaigners in many other spheres, have long recognised that being prepared to say "no" is often the most effective way of achieving high standards.

Advice for Dublin's cycle lanes

The hazards of cycle lanes are real and there is often a contradiction between a highway department introducing lanes and the same authority's road safety department trying to mitigate the dangers.

In Dublin, where many lanes have been marked in recent years, the following official advice is issued to urge cyclists to protect themselves against the increased danger of drivers overtaking and then turning left:

"It would help the cyclist immensely if he / she indicated to drivers behind them that they intended to go straight on across the junction by using the hand signal for going straight ahead."

CAMPAIGN FOR HIGH STANDARDS

The launch of CCN's Campaign for High Standards in the last CCN News has clearly touched a raw nerve, with many cyclists vying with stories of the low standards in their areas. Narrow cycle lanes certainly seem to be a widespread and increasing nuisance, Daventry achieving the record minimum width to date of just 30 cm!

Adequate space in which to cycle is probably the most important requirement for both safety and comfort. Here we focus on road narrowings and traffic lane widths.

ROAD NARROWINGS

Description A reduction in the width of the carriageway over a short distance.

Design variations Narrowings may involve tapering or building out from the road edges with traffic passing through a central gap, or there may be a centre island or similar device that traffic passes to either side. There are also chicanes, which are formed by two or more staggered build-outs on alternate sides of road.

Advantages May result in a reduction in the volume or speed of motor traffic, but the effect is greatest on large vehicles and often minimal on private cars.

Safety Centre islands, flanked by narrow traffic lanes, cause much discomfort to cyclists and there is an increased risk of a collision if drivers race cyclists to the island or try to overtake within the limited lane width. Build-outs are usually less of a problem as the cyclist can choose when to enter the traffic lane in order to pass through the gap, and this can be timed to minimise conflict.

The Law At centre islands motorists should not encroach upon the route taken by a cyclist and should yield precedence if overtaking cannot be accomplished safely. This obligation is often flouted, in part because many motorists underestimate the speed of cyclists. At build-outs, it is the responsibility of the cyclist to take care entering the through traffic lane, if not already riding in it.

Standards DETR/IHT recommends that narrowings should either be 4m or wider, or 3m or narrower.

Basis of standards and effect on motorists Lane widths of 4m or more should allow sufficient space for a cyclist to be overtaken safely by cars. Where HGVs or buses are likely, this width must be at least 4.25m to allow overtaking. If the lane width is 3m or less, most drivers perceive this to be too narrow to overtake a cyclist and will not usually attempt to do so. Some, however, may still try to get to the gap first and the narrow width can still frighten less confident cyclists. Lane widths between 3m and 4m are the most hazardous, for many drivers perceive there to be sufficient room to pass a cyclist yet in reality there is not.

Cycle bypasses Build-outs may be bypassed by cycle lanes, but unless these are built to a high standard (minimum 1.5m wide, direct entry and exit with no conflicts, surface flush with road and kept free of debris) they should not be accepted as a satisfactory alternative. There is generally no way to bypass a centre island, although the marking of an advisory cycle lane (at least 1.5m wide) through the gaps has been tried as a way of encouraging motorists to yield.

Defensive action At build-outs, take up a central position in the through traffic lane in good time as you approach and ride centrally through the gap. Never attempt to share a gap with a vehicle coming in the opposite direction. At a centre island, signal and move right at the approach to the island to deter overtaking, but be ready to move back quickly if necessary.

Vehicular Cycling verdict Build-outs are usually acceptable devices where a cyclist can take protective action by adopting the primary riding position. Centre islands, on the other hand, are some of the most potentially hazardous features to be found.

Cycle Audit and Review

In 1998 the Institution of Highways & Transportation, in association with DETR, published Guidelines for Cycle Audit and Cycle Review, as a means by which highway authorities should assess the cycle friendliness of new schemes (audit) and existing infrastructure (review). The procedures are intended to highlight features that do not meet the accepted standards.

Campaigners should press for these guidelines to be adopted and used. Although many Local Transport Plans promise to do this, in practice the procedures are not well known or put into practice. When assessing any scheme that might be detrimental to cycling, always ask to see the results of the cycle audit/review and also to see the safety audit, which is a separate process covering all road users.

Cycle Audit and Review should be regarded as the minimum assessment of scheme quality. Many of the standards being assessed are themselves inadequate, and the quality of assessment may reflect a lack of experience. Local circumstances must also be taken into account. If you feel that higher standards are justified, do not hesitate to press for them!

CAMPAIGN FOR HIGH STANDARDS

Support for CCN's Campaign for High Standards continues apace, with no shortage of feedback about the low standards that are all too common. Hove is another close-runner for nomination of the narrowest cycle lane, one which is almost completely filled with the highly slippery thermoplastic double yellow lines, which have had to be made narrower to fit. CCN has started to highlight the issues to a wider audience through a press release to the professional journals.

As well as support, however, we've also received some brickbats in relation to standards for Road Narrowings (CCN News 50). We've been criticised for not insisting on standards that are high enough!

So we consider Road Narrowings again this issue, with acknowledgement to Robin Field of Cycel who has devoted much time to this issue.

ROAD NARROWINGS – 2

Standards As previously mentioned, DETR/IHT in *Cycle-friendly infrastructure* recommends that narrowings should be either 4m or wider, or 3m or narrower.

This advice, however, is now considered by many people to be bad advice. Whilst it is certainly correct that gaps of 3.1 to 3.9 metres should be avoided because they encourage other vehicles to squeeze past cyclists where there is insufficient space, gaps of 3m or less can be very intimidating to many cyclists and should not be used, particularly on busy roads.

The 4m minimum width is also inappropriate on busy roads, particularly if HGVs or buses are part of the typical traffic mix. Dutch standards [1] require minimum clearances of 4.7m at 30 km/h (20 mph) and 5.15m at 50 km/h (30 mph), made up as shown in the side panel. Where only cars are likely to be present, these clearances may be reduced by 0.85m in each case.

Cyclists should therefore insist on much greater clearances beside centre islands and at other narrowings than are suggested by DETR/IHT. The *minimum* acceptable widths should be related to traffic speed. Robin Field suggests 4.0m at 20 mph, 4.5m at 30 mph and 5.0m at 40 mph and above.

Centre islands or refuges Campaigners should be aware that the calming effect of refuges is minimal. TRL suggests 3 to 5 mph at test sites [2]. If a refuge is intended to assist pedestrians to cross the road, a zebra crossing may be better for both pedestrians and cyclist.

Build-outs and throttles These seem to cause fewer problems for more confident cyclists but are not a good way to encourage others to cycle. Build-outs on busy roads are a particular problem. The same clearance considerations apply but there may be other considerations such as whether the narrowing is single-lane or humped and good standards will be needed in these respects (to be considered in future issues of *CCN News*).

Cycle bypasses Campaigners should be cautious before accepting (or seeking) cycle bypasses to sub-standard narrowings. Only if these are themselves build to a high standard, with adequate width (min 1.5m), even surface, direct entry and exit and unlikely to be obstructed by parking or debris are they likely to be acceptable to all types of cyclist. By current standards of design this is unlikely, leading to even greater aggravation and harassment for cyclists that do not find them acceptable.

	Max Traffic Speed	
Distance	*30 km/h*	50 km/h
Kerb - cyclist	0.25 m	
Moving width of cyclist	0.75 m	
Cyclist - HGV / bus	0.85 m	1.05 m
Width of HGV / bus	2.60 m	
HGV / bus - kerb	0.25 m	0.50 m
Total	**4.70 m**	**5.15 m**

Your views

High Standards need to be the concern of us all, so let us know about your pet curses that are due to low standards in the environment in which you cycle.

Subjects suggested for coverage in future issues of *CCN News* already include traffic calming, surfaces, street furniture, off-road cycle paths and tramways. If you'd like to add to the list, or if you have views on any of these subjects that you'd like to be considered, please get in touch with John Franklin *(contact details on back page)*.

This issue we look at some aspects of traffic calming. Road narrowings were covered in the last CCN News and some other calming features may be featured in the future

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TRAFFIC CALMING

Road Humps and Speed Tables (raised junctions) These can be effective devices to reduce vehicle speeds, but can cause disproportionate discomfort to cyclists if not implemented to a high standard. The most important criteria are the upstand at the start of a hump, the gradient and surface transitions.

An upstand must not exceed 6 mm but even this can be uncomfortable for a cyclist and even damage a cycle. There is seldom a reason for an upstand – it has negligible effect on vehicle speeds – so should there should be none. The ramp gradient should not exceed 10% and the ramp height 75 mm for humps and 100 mm for raised junctions. There is no standard for surface transitions, but they should be gently profiled to minimise discomfort. Sinusoidal humps are considered to be the most cycle-friendly; flat-topped humps the least.

Cycle bypasses are desirable at humps only if at least 1.5m wide, with a direct entry and exit that is unlikely to be obstructed.

Speed Cushions are much to be preferred from a cyclist's point of view, although they are less effective than humps in reducing speed. Although a cyclist can normally avoid passing over a cushion, this may not always be the case so similar considerations apply. The gap between a cushion and the kerb should be close to the maximum standard of 1.2m. Smaller gaps give insufficient space for a cyclist in adverse conditions, particularly where the surface quality is not ideal or it is wet, or the approach involves manoeuvring.

All raised objects, such as cushions, can be hazardous to a cyclist at night if not marked to be clearly visible.

Rumble Strips All but the most severe examples have little real effect on vehicle speeds, but can be very uncomfortable and sometimes dangerous to a cyclist. Urge against the use of these devices wherever possible. Transverse bands, at decreasing intervals, are as effective with minimal impact on cyclists.

Where rumble strips are used, there should be a gap of at least 1m between the strip and the edge of the road (taking into account road edge condition). Where there is a series of closely-spaced strips, a clear passage of 1.5m is desirable for cyclists.

Irregular or Raised Surfaces These might be textured tarmac, or blocks, setts or similar material. Some can be very uncomfortable or hazardous for cycling. Chamfered edges and cobbles can affect stability.

Always ask to see a sample of what is proposed, together with a technical site drawing. Look critically at angles and spacing.

References:

Cyclists and Traffic Calming, CTC, 1991
Cycle-friendly Infrastructure, DETR/IHT, 1996
DETR Traffic Advisory Leaflet 7/96, *Highways (Road Humps) Regulations 1996*
(also other leaflets in same series on various aspects of traffic calming)

Speed reduction or cycle facilities?

Campaigners in Cornwall draw attention to the need to look for wider benefits when promoting cycling. Pressing for cycle routes will, at best, achieve limited routes for some cyclists to use. Everyone else – pedestrians and the wider community as well as most cyclists – will still have to contend with the same general traffic situation.

Maximising pressure and resources for speed reduction, on the other hand, brings benefits to a much wider audience and is a step towards achieving better cycling conditions over a substantially greater area.

Work with others – not against them!

Minimum criteria for High Standards

At the CCN/CTC Ryde conference, CCN Chair John Franklin gave an account of the CCN's Campaign for High Standards, including a list of minimum criteria that should be met if high standards are to be achieved.

There have been requests since the conference for the list of minimum criteria to be made more widely available, so it is reproduced here.

- **Cyclists need 2m unencroached space for safety and comfort.** Without cycle facilities, this is what an astute cyclist will normally get on most roads. Cycle-only space, such as cycle lanes, must encompass this whole requirement in their width for a cyclist can expect nothing outside.
- **You should not have to look through more than 90° for conflicting traffic**, except when overtaking or changing lanes. New cyclists and children find it difficult to survey traffic behind them; don't expect them to look backwards confidently or force them to change lanes frequently (e.g. in and out of a cycle lane, perhaps because it's obstructed) just to go ahead.
- **Visibility should be sufficient to see the fastest approaching vehicle in sufficient time to assess its progress and react accordingly**. If you cannot see a hazard approaching, you cannot react to it in the way that maximises safety and comfort. It should not be assumed that cyclists will stop wherever visibility is substandard – many will take the risk instead.
- **6m is the minimum radius a cycle should have to negotiate**. Cycles don't turn on the spot, and sharp bends are invariably accompanied by difficult visibility.
- **Two-way cycle paths need centre lines even more than roads**. Keeping left is probably the most important rule of the road, but on an undelineated path cyclists frequently wander over its width, which can lead to serious cyclist injuries. On a cycle path, a cyclist is closer to oncoming vehicles than on most roads and has less escape room – good riding discipline is essential.
- **Surfaces must be level and even**. More casualties happen due to poor surfaces than motor vehicles. Don't accept cycle paths that cross joins between surfaces at anything other than 90°. Even flush joins – which all should be – erode over time. Even surfaces are important not just for comfort, but so that a cyclist is not distracted from traffic
- **Any route for cyclists must be 100% compatible with the Highway Code**. If cyclists have to follow two sets of rules there'll be confusion and conflict. The Highway Code sets out the established rules for cyclists and all cycle routes should assist these rules to be obeyed.

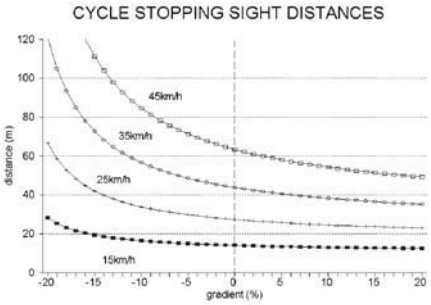
CAMPAIGN FOR HIGH STANDARDS

Good visibility is crucially important for safety. A cyclist must be able to see any approaching hazard in good time to react and determine the best course of action. Likewise other road users must be able to see a cyclist so that they can play their part in avoiding conflict. General road design has evolved over many years so that problems of visibility rarely arise. Cycle facilities, on the other hand, are invariably compromises in space and expenditure and have a long way to go in establishing safe practices.

This issue looks at some of the criteria that determine how far you should be able to see and be seen.

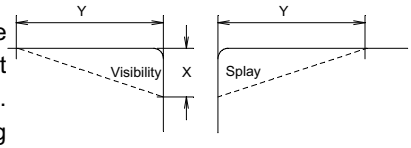
VISIBILITY

Distance The visibility (or sight distance) needed by a cyclist depends, as a minimum, on the distance it will take a cyclist to stop at the speed travelled. You must be able to stop within the distance that you can see to be clear. Apart from initial speed, other factors that need to be taken into account include gradient, whether the surface is wet or dry, the performance of typical cycle brakes (in particular how they perform in the wet) and the total perception and reaction time (cyclist and braking system), especially when the cyclist is tired.



A standard formula can be derived that draws all these variables together. The results are best summarised by a graph:

Visibility Splays Considerations such as the above have led traffic engineers to adopt standard visibility splays for highway junctions. They are defined in terms of distances along the two intersecting highways, the X distance being along the non-priority route and the Y distance along that which has right-of-way. Within the triangles formed with these distances, there should be no obstruction higher than 600 mm.



Priority highway	*Y distance*
Main road (100 km/h limit)	215 m
Road (70 km/h limit)	120 m
Local distributor road (48 km/h)	90 m

The Y distances should be the same no matter what is the nature of the minor route, for they are related to the ability of priority road traffic to stop in the presence of vehicles turning out of the cross route:

The X distance is normally 9m for a road, but for a cycle path the UK permits a relaxation to 4.5m Give Way signs are provided and an absolute minimum of 2m with Stop signs. Other countries see no reason to treat cyclists less favourably than other traffic. The USA recommends that normal road criteria should apply and Sweden requires a minimum of 10m.

Traffic calming and cyclists

The most vociferous feedback that has been received to our articles in CCN's *Campaign for High Standards* has concerned traffic calming. It is literally the case that all the physical traffic calming methods – from road narrowings to speed cushions – have met with criticism from cyclists somewhere, who feel that the devices invariably lead to driving behaviour by motorists that is to the detriment of cyclists' safety.

The message is to be very cautious about *any* physical traffic calming scheme even if it leads to an overall reduction in vehicle speeds. How drivers interact with cyclists is much more important than the actual speed at which they travel.

References

- *Cyclists at road crossings and junctions*, DTp Local Transport Note 1/86
- *Residential roads and footpaths*, DoE/DTp Design Bulletin 32, 1992
- *The layout of major/minor junctions*,

CAMPAIGN FOR HIGH STANDARDS

Designing for cyclists is intrinsically different to designing for pedestrians, yet so many cycle paths are little more than glorified footpaths with a changed legal status. A cycle is by no means some kind of 'rolling pedestrian', as cyclists may easily travel 5 times as fast as a pedestrian, with much more momentum., and they cannot side-step to avoid conflict.

The safety of cycle paths is much less assured than that of roads or footpaths, and the devil is invariably in the detail of the design. This issue examines two aspects of path design that frequently introduce more danger than they should.

CURVES

Radii: Cyclists can't turn on the spot but need an amount of space that depends upon their initial speed and characteristics of the path surface and cycle tyre. Also, a cyclist turns a curve by leaning into it, and this has consequences for clearances through the curve as discussed below.

The minimum radius of curvature negotiable by a cycle can be expressed in the adjacent graph. This assumes a crossfall (slope) across the cycle path of 2.5%, with the lower side of the path on the inside of the curve. This is the recommended standard for crossfall; curve radii need to be greater for smaller or negative crossfalls.

The UK standard for minimum curve radius is only 6m, which equates to a cycling speed of less than 10 mph. Other countries insist upon much more generous minima: Sweden requires 15m on the level, but 30m on a gradient of more than 3%; the USA requires 32; and the Netherlands recommends 100m, with an absolute minimum of 60m for a two-way path and 30m if one-way.

According to the US AASHTO manual: "When substandard curves must be used on bicycle paths because of right-of-way, topographical or other considerations, standard curve warning signs and supplementary markings should be installed. The negative effects of substandard curves can also be partially offset by widening the pavement through the curves".

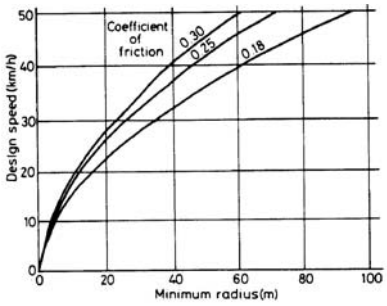
CLEARANCES

Horizontal, on straight paths: The Romans required a bow's length clear aside their highways so that they had warning of marauders who might leap in front. The same premise applies to cycle paths, with regard to both vehicular safety and personal security..

The UK suggests 0.5m desirable, 0.25m minimum, horizontal clearance alongside cycle paths, which space should be free from any solid or tall objects, including lampposts. Low clearances effectively reduce the width of the path as a cyclist should be expected to keep well clear of the edge. It is important that the minimum clearance is available at all times. This means that plants, if present, should be pruned well back to allow for subsequent growth. without intruding into the clearance zone.

Once again, the UK standards are particularly lax. Almost all other countries stipulate a minimum clearance of 1.0m.

Horizontal, on curves: Additional clearance at curves is required to provide adequate forward visibility. The adjacent graph illustrates the clearance distances from the centre of the inside lane. Distances may be related to cycling speed and gradient using the graph in the last Campaign for High Standards.



References:

- *Ways of helping cyclists in built-up areas,* DTp Local Transport Note 1/78.
- *Residential roads and footpaths*, DTp Design Bulletin 32, 1992.
- *Guide for development of new bicycle facilities*, AASHTO, 1991.
- *Cykeln i stadsplanen*, Trafikplanering ab (Sweden).