Certu

Basic road safety information

Information sheet nº. 07

August 2006

Cyclists

The purpose of this information sheet is to raise awareness of the need to consider cyclists and their safety in road development schemes.

After looking at the safety issues associated with this mode of travel, it considers the specific constraints applying to cyclists from which it derives the main planning requirements.

Article 20 of the Air and Rational Use of Energy Act (LAURE) of 30 December 1996 specifies that all renovations of urban roads carried out after 1st January 1998, with the exception of motorways and expressways, shall allow for cycle routes with facilities in the form of cycle paths, road markings or separate corridors, according to traffic needs and constraints. Thus, each urban road renovation scheme will provide an opportunity to organise the space differently in favour of pedestrians and cyclists and should thus provide a sufficiently well-meshed cycle network in the short term.

Facts regarding road safety

⇨Basic accident statistics

Cyclist injuries in France (source: ONISR)

France, all areas	Number of cyclists killed	Number of cyclists seriously injured
2000	255	1039
2001	242	925
2002	211	850
2003	190	848
2004	167	669

Cyclist deaths represent 2 to 3% deaths from all modes of transport.

Age of cyclists killed (all areas) (source: ONISR 2003)

Age range	walking, cycling...
0-14 ans	10 %
15-24 ans	7%
25-44 ans	14%
45-64 ans	34%
64 ans and more	34%

URBAN AREAS

- **45 %** of cyclist deaths;
- **44 %** of accidents involving a cyclist (38 % of deaths) occur at junctions;
- **19 %** of accidents involving a cyclist (24 % of deaths) occur at night;

SERIOUSNESS

- the seriousness of accidents involving a cyclist is inversely proportional to the size of the town and linked to the speeds adopted by motorists;
- the figures indicate that there are 13 deaths per 100 accidents involving injury in the open countryside and 2 to 3 deaths per 100 accidents in urban areas (depending on the size of the town).

⇨Types of accident involving cyclists

MAIN TYPES OF ACCIDENT AT AT-GRADE JUNCTIONS

- right-angle collisions;
- light vehicle turning left in front of an oncoming cyclist;
- light vehicle turning right in front of a cyclist travelling in the same direction;

Urban

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- Cyclist turning left, vehicle in the same or the opposite direction.

PRINCIPAL TYPES OF ACCIDENT AT ROUNDABOUTS

- 40 % refusing priority to cyclist on the roundabout;
- 20 % car turning right while the cyclist continues on the roundabout;
- 10 % users travelling in the same direction, rear collision;
- rare, but serious: cyclist crushed against the kerb upon entry to the roundabout.

LINK SECTION ACCIDENTS

- common in open countryside with rear collision (serious);
- in urban areas: car doors, parking manoeuvres frontage road accidents.

Important information concerning cyclists and the consequences on the planning of roads

There are various categories of cyclist, ranging from sportsmen to school children, and thus:

- different perceptions of risk;
- different levels of experience;
- different behaviour in traffic.

There are two main recurring factors in accidents involving cyclists:

- the difference of speed compared to motorised users;
- poor mutual visibility.

This observation will condition the nature of the various types of facilities for ensuring the safety of cyclists.

⇨Difference of speed

In the event of a collision, the difference of speed between bicycles and cars or between bicycles and motorcycles (or motorbikes) is an important or aggravating factor of bodily injury.

SOME ESSENTIAL RULES AND REGULATIONS FOR THE SAFETY OF CYCLISTS

- The slowing of vehicular traffic should always be aimed for in order to increase the safety of cyclists. It is also beneficial for the safety of all, in particular pedestrians, and the local quality of life;
- minimum lateral clearance when overtaking a bicycle:

- 1.00 m in built-up areas;
- 1.50 m in the open countryside.

FACILITIES:

IN TOWN

- in 30 kph zones, no special facilities for cyclists, other perhaps than contraflows,
- on roads with a 50 kph speed limit, provision of cycle lanes (preferred);
- where the speed limit exceeds 50 kph, provision of cycle tracks (preferred);
- cyclists are permitted to ride at walking pace in pedestrian areas. This cohabitation does not present any safety problems.

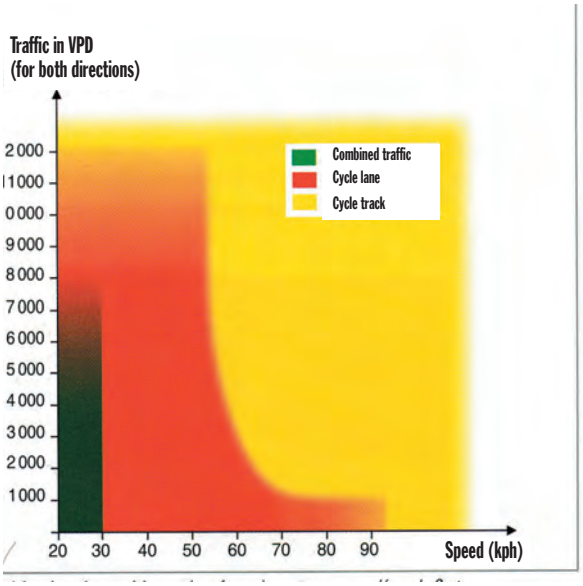


Diagram obtained from French trials and recommended by the Certu

IN THE OPEN COUNTRYSIDE

- paving the shoulders makes the road more welcoming for cyclists on busy roads. *For these roads, the first response should be to seek separate routes such as cycle or farm tracks, in particular close to urbanised areas; safety is not a major issue on quiet roads.

A well-surfaced shoulder is suitable in many cases.

Three reminders

- cycle facilities are reserved only for cyclists (motorcycles are only permitted in limited cases, where decided by the authority invested with police powers and indicated on the ground);
- width of cycle lanes:
- recommended: 1.50 m clear width between markings;
- minimum: 1.00 m clear width between markings (at singular points);
- width of cycle tracks:
- recommended: 2.00 m for one-way tracks; 3.00 m for two-way tracks;
- minimum: 1.50 m for one-way tracks; 2.50 m for two-way tracks;

⇨Mutual perception

Mutual perception between cyclists and other users is very important, particularly at junctions, where attention is very solicited.

- Speed calming is the determining factor for mutual visibility (or perception). It ensures a widening of the field of vision and improves the taking-in of information by drivers. This is already the case for cyclists and remains to be gained by drivers.
- In order to compensate for the small size of bicycles relative to other users (light or heavy vehicles) equipment should be used to make their presence more visible:
- lighting (obligatory white-coloured front reflector);
- axial and lateral reflecting devices (obligatory rear and side reflectors);
- light-coloured clothing.

The urban environment and the layout of roads must be as simple as possible in order that cyclists and motorists can perceive one another, easily understand the manoeuvres to be performed (legibility) and concentrate on potential conflicts.

- Vehicles' blind spots worsen the poor perception of cyclists:
- added widths to be provided where cycle facilities run alongside parked cars (approx. 0.50 m);
- protections at the entries/exists of roundabouts to be envisaged so as to avoid cyclists being pinned against the kerb by heavy vehicle trailers (rare but serious accidents).

The traffic island plays a protective role for cyclists.

VISUAL OBSTACLES

- no obstructions to visibility
- no car-parking should be allowed upstream of intersections with cycle facilities;
- cycle tracks must be moved away from buildings and fences in order to improve the mutual visibility of cyclists and residents;
- it is preferable to position cycle tracks closer to the general traffic at junctions to improve perception of cyclists;
- a distance (known as the «visibility» distance) must be respected and kept clear of all obstacles on the main road for cyclists emerging from secondary roads. This distance is calculated on the basis of a speed corresponding to V 85 (the speed of 85 % of users) and a time (the «visibility and crossing» time) for which the recommended values are 8 seconds for a STOP junction and 10 seconds for a GIVE-WAY junction, which should be increased by 1 second in the presence of a left-hand turn on a three-lane road for the main road, or of a gradient for the secondary road.

FIELD OF VISION

Conflicting traffic flows at junctions should systematically meet at right-angles.

⇨Better road quality to improve safety for cyclists

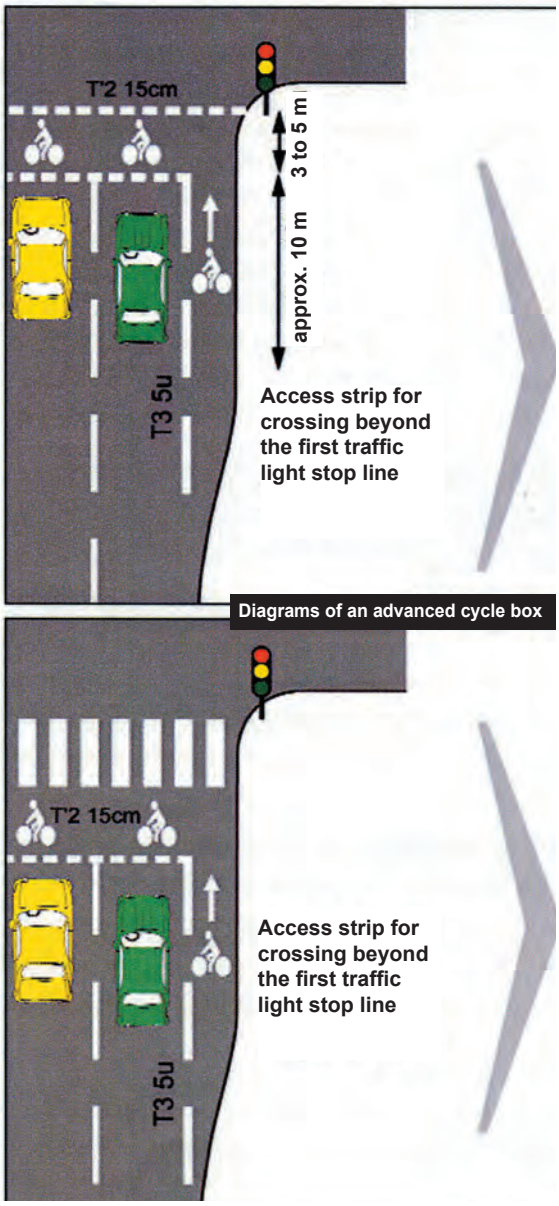
The progress of cyclists is greatly affected by the quality and details of the road. Any unexpected, and therefore surprising, manoeuvre can be unsafe.

These include, in particular:
- potholes and lumps of asphalt, that can cause falls or sudden changes of trajectory;
- edgings at the entry to cycle facilities, particularly where the entry is on a skew;
- gutters in poor condition, poorly oriented drainage grates;
- irregular, gravel or poorly maintained road surfacings;
- obstacles (particular attention should be given to the choice of separator between cyclists and motorists).

JUNCTION DESIGN

- The simplicity and compactness of junctions often allow a clearer understanding of requiredmanoeuvres and of potential areas of conflict.
- Various road design measures provide increased safety for cyclists when carrying out a left-hand turn manoeuvre (visibility, positioning):

- the transformation of cycle tracks into cycle lanes;
- advance cycle boxes (area reserved for cyclists in front of the stop line for vehicular traffic at traffic light-controlled junctions;



Diagrams of an advanced cycle box

- feeder lanes (incorporated lanes reserved for cyclists).

- Roundabouts should be as compact as possible to ensure the safety of cyclists (small radii, single lane entries and exits, etc.).

- The specific cycle facility markings must be stopped where they do not have priority.

- The grade-separated junctions often situated on the outskirts of towns frequently cut dangerously across cycle routes (crossing of exits and entries). It is essential to take account of cyclists at such junctions.

SPECIAL CASES

- Layouts such as «two-ways roads with one direction reserved for cyclists», which often provide shortcuts appreciated by cyclists, offer a high level of safety on mid-link sections.

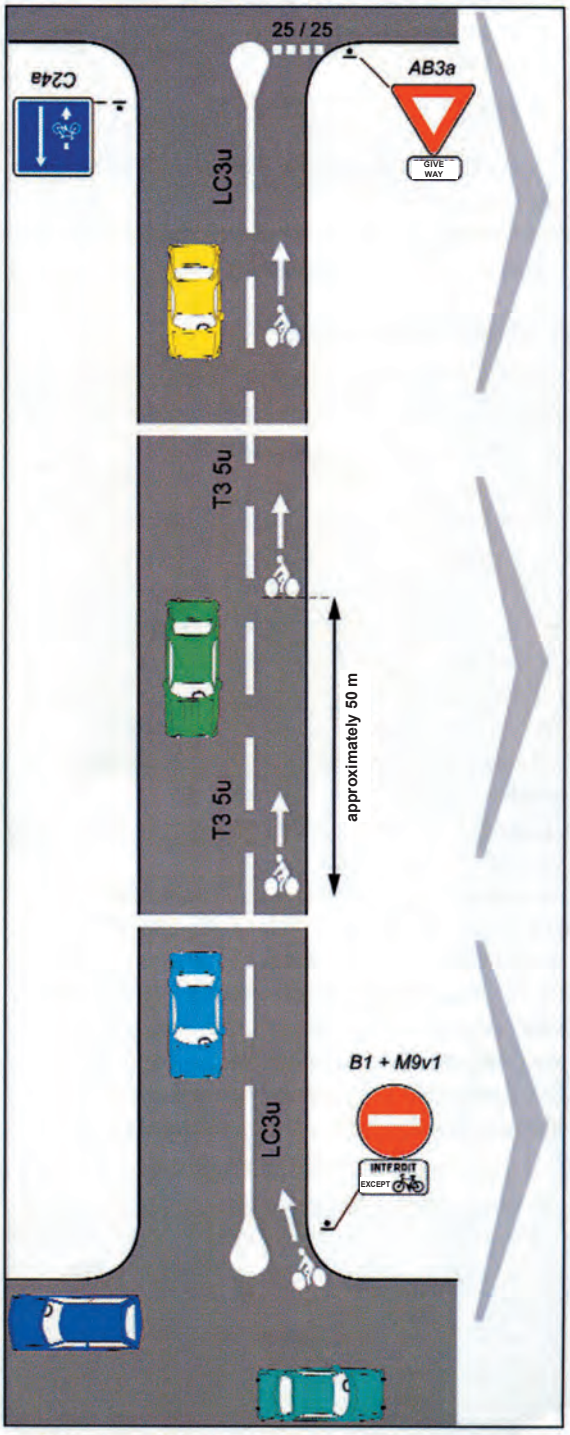


Diagram of a two-way road with one direction reserved for cyclists

- The cohabitation between cyclists and public transport, through the opening of bus lanes to cyclists, does not present any safety problems (for a closed corridor, the minimum recommended width is 4.30 m).

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Associated subjects

- Parking
- Controlling speeds through design

Bibliographic references

- Recommandations pour les itinéraires cyclables (Recommendations on cycle routes), Lyon Certu, August 2005.
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- *Clean Air and Rational Use of Energy Act (LAURE)* of 30 December 1996, French framework law No. 96-1236

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