

Note
books



CREATING CYCLE-FRIENDLY ROADS

SUCCESS FACTORS


**RÉPUBLIQUE
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Cerema
éditions

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FOREWORD

Cycling is an efficient transport solution with proven individual and collective benefits. Many European countries have made this form of mobility a central feature of their urban development strategies.

The key to achieving a massive uplift in cycling is to encourage a mode shift away from car transport, by facilitating safe cycling while also restricting car use.

To reach this goal, cyclists must be provided with a welcoming, inclusive public space, by simultaneously pursuing:

- efforts to build **efficient cycling infrastructures**, reclaiming space from cars;
- the general trend for **traffic calming measures**;
- **limitations on motorised through-traffic** in residential neighbourhoods;
- development of **comfortable pedestrian areas** to ward off potential conflicts.

Radically transforming the road network to make it more appealing to existing and future cyclists ranks among the major challenges facing municipal authorities in the coming years.

The eight key recommendations for a successful cycle transport development policy described in this Cerema notebook are intended for all (primarily urban) development professionals and decision-makers.

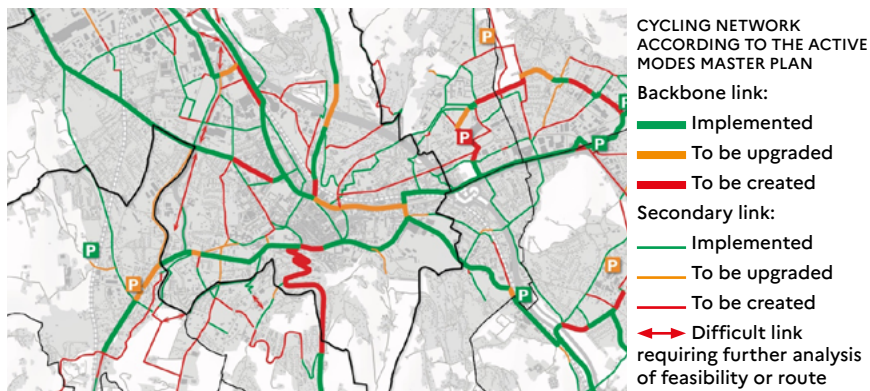


1. PLAN THE CREATION OF A CONTINUOUS, PRIORITISED CYCLING NETWORK

To give cycling mass appeal, building a **coherent, continuous and prioritised network** covering the whole administered area is crucial. Isolated facilities are not enough to make cycling attractive, safe, efficient and competitive relative to other transport modes.

The **cycling framework plan** is the core planning tool for ensuring that routes are continuous and suitably meshed. Versions of this plan can be produced at local, department/county, regional, national and European scales. The plan may be produced as part of a broader mobility planning approach, and may for example be the subject of a concrete measure in a simplified mobility plan, a mobility plan or a regional plan for planning, sustainable development and territorial equality.

It serves to integrate a **comprehensive, all-modes assessment** (covering walking, cycles, public transport and cars) for travel and parking, and includes analyses relating to **road network prioritisation** as well as a **review of motor vehicle traffic plans** for the studied scope. The framework plan includes a **multi-year investment plan**, governing the actual implementation of the planned improvements.



excerpt from the Chambéry framework plan

The cycling network in a built-up area can be divided into three traffic-based categories: the cycling network with a high level of service (HLS) (more than 2,000 cyclists per day), the main network (500 to 3,000 cyclists per day) and the service network (fewer than 750 cyclists per day). The purpose of the main network is to supplement the less-ramified HLS cycling network, providing a denser network mesh able to channel most bike trips longer than 1 km.

LEARN MORE...

Ademe. [Développer le système vélo dans les territoires](#)

(Developing regional cycling systems). 2021

Cerema. [Réseau cyclable à haut niveau de service](#)

(Cycling networks with a High Level of Service) (Information sheet). 2016



Including active transportation in mobility plans: A legal requirement

Increasing cycle traffic is a traditional objective for mobility plans, first introduced in 1996. The aim is to incorporate cycling into general mobility policy, both from a strategic perspective (through a greater per-mode share, for example) and operationally, in terms of services and infrastructures. In France, the 2019 Mobility Policy Act ([loi d'orientation des mobilités \(2019\)](#)) increased the consideration given to active transportation modes by requiring mobility plans to include a section addressing the continuity and safety of walking and cycling routes.

This section has been instrumental in the development of active transportation; in particular it establishes a link between user information and infrastructure-oriented approaches (focused on parking, multimodal hubs and city entrances, for example).

REFERENCES

[Article L.1214-2-1 du Code des transports](#) (French Transport Code)

2. RAPIDLY IMPROVE CYCLABILITY WHENEVER POSSIBLE

In conjunction with the mobility planning effort, which will have required months of studies and consultations, measures to rapidly improve an area's cyclability can be implemented quickly, without necessarily having them approved in advance via a planning document.

Implement temporary cycle facilities

The aim is to trial technical solutions for cycle facilities, in particular on sections of road subject to residual technical uncertainties, or for which permanent facilities would be costly and/or time-consuming to implement.

The benefits of *in situ* trials of cycle facilities are widely acknowledged.

They offer a pragmatic means of checking users' appetite for cycle travel on the studied routes, while retaining the option to adapt facilities during the implementation process.

This solution also helps to detect sticking points and propose remedial solutions or changes to the



network before the project becomes permanent, or even to back-track if the adaptations prove inadequate.

Opportunities may also arise during construction or maintenance works. For example, a construction site that extends into the road, blocking one or more traffic lanes, may reveal the potential to reassign the neutralised area to active transportation modes without disrupting the traffic status quo.

LEARN MORE...

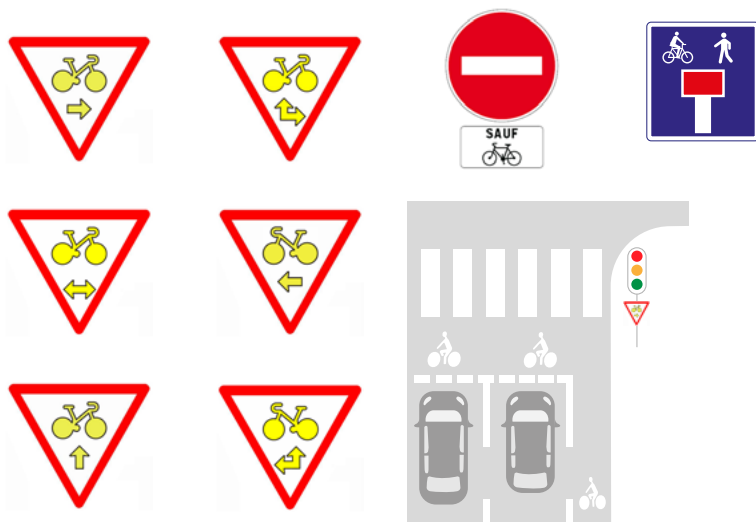
Cerema. [Aménagements cyclables temporaires, tester pour aménager durablement.](#)

(Trialling temporary cycle facilities in a sustainable development approach)

Cerema notebooks. 2020.

Harnessing regulations

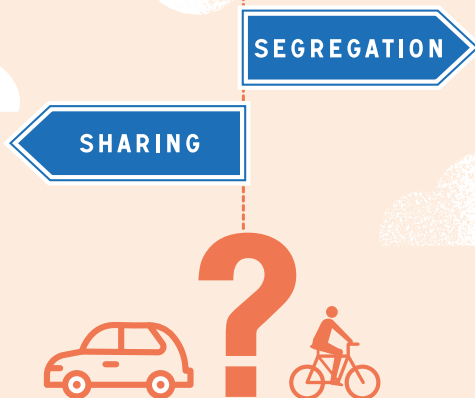
Similarly, a number of rapidly-implemented measures improve traffic conditions for cyclists, including cyclist give-way at traffic lights, contraflow cycling, advanced stop lines, bike boxes and road closures.



LEARN MORE...

Cerema. [Plan d'action pour les mobilités actives - PAMA](#)

(Action plan for active mobility). 2015



3. CHOOSE BETWEEN SEGREGATION AND SHARING

The decision whether to segregate or share modes is fundamental when seeking to create a welcoming, inclusive public space for all forms of active transportation.

This choice cannot be made until road network priorities have been defined, or failing that, a local assessment of the role of the planned improvements conducted.

Three main criteria must be considered in parallel, before choosing whether cyclists and motorists should share a particular space: the **volume of motor traffic**, the **actual speed of travel**, and the desired **cycle traffic**.



Motorised traffic volume



Proximity with motor vehicles often creates stress, discomfort and an impression of vulnerability for cyclists, even if not all are deterred by such factors.

The traffic volume provides an indication of the frequency of such proximity, informing the decision whether or not to allow shared use of the road.

Feedback from French and international road network managers shows that when two-way traffic exceeds **4,000 pcu/day**¹, cohabitation between cyclists and motorists in the same space tends to be problematic.

Where this threshold is exceeded, developers have two main options for ensuring that the chosen technical solution is cycle-friendly:

- **create segregated cycle facilities:** this option implies creating facilities of sufficient quality to be more appealing than the main carriageway.

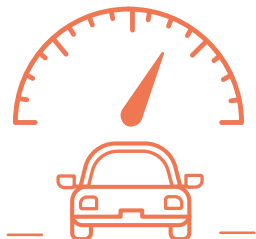
They must be appropriately sized, with a particularly favourable treatment at junctions.

- **plan shared use of the space by cycles and cars, but modify the traffic plan to decrease the volume of motor traffic** below the aforementioned thresholds: this is often the only realistic solution in narrow streets, where creating segregated facilities compliant with applicable width standards would not be possible. Nevertheless, every effort should be made to maintain enough width to allow safe coexistence between cyclists and motorists, particularly in overtaking situations.

¹ - pcu: passenger car unit - This traffic measurement unit reflects the greater impact of certain vehicles, such as HGVS, by assigning them a multiplication factor of 2.

Actual speeds by motorists

Speed calming in town is essential, both for safety reasons and to enhance quality of life and user-friendliness. It is one prerequisite (**but not sufficient in itself**) for having cyclists and motorists travel in the same space.



Rather than the posted speed limit, it is the **actual speed** of motor vehicles that determines cyclists' safety and their perception of safety. Actual speeds are typically measured using the V85 indicator, which represents the speed

below which 85% of free vehicles travel. (Free vehicles are vehicles whose movements are not constrained by surrounding traffic). Even more importantly, the **distribution** of individual vehicle speeds colours road users' perceptions.

Cycle traffic




The actual or desired cycle traffic must also be taken into consideration, as must the **target level of service for cyclists**.

For example, while a 30km/h zone with low levels of motor traffic (<4,000 pcu/day) is quite capable of accommodating a mix of road-users including up to 750 cyclists/day, it can prove problematic if cycle traffic reaches several thousand trips per day, particularly on HLS cycling networks.



DECISION-MAKING GUIDE TABLE

The following decision-making guide table suggests cycle facilities to consider, based on three criteria:

|  V85 ACTUAL MAXIMUM SPEED |  MOTOR TRAFFIC IN PASSENGER CAR UNITS PER DAY (IN BOTH DIRECTIONS OF TRAVEL) | DESIRED CYCLE TRAFFIC (IN NUMBER OF BIKES PER DAY)  | | |
|---|---|--|--|---|
| | | SECONDARY CYCLING NETWORK (TRAFFIC LESS THAN 750 CYCLISTS/DAY) | MAIN CYCLING NETWORK (TRAFFIC BETWEEN 500 AND 3,000 CYCLISTS/DAY) | HLS CYCLING NETWORK (TRAFFIC >2,000 CYCLISTS/DAY) |
| 30 _{KM/H} OR LESS | < 2,000 | Mixed traffic | Bicycle boulevard or mixed traffic | Bicycle boulevard or cycle path |
| | 2,000 - 4,000 | | Cycle lane or mixed traffic | Cycle path |
| | > 4,000 | Cycle path or lane | | |
| 50 _{KM/H} | < 1,500 | Mixed traffic | | Cycle path |
| | 1,500 - 6,000 | Cycle path or lane | | |
| | > 6,000 | | | |
| 70/80 KM/H | < 1,000 | Mixed traffic | Cycle path/greenway/ cycle lane/right hard strip | Cycle path |
| | 1,000 - 4,000 | Cycle path/greenway/ cycle lane/right hard strip | Cycle path or greenway | |
| | > 4,000 | | | |
| PRIORITY SCHEME | | Choose according to circumstances | | Priority over cross-traffic |

Note

Additional recommendations relating to interurban environments, and in particular to roads with speed limits of 90 km/h or above, will be published in a separate document. The requirements on such roads will necessarily be stricter (in terms of separating traffic flows) than those relating to roads with speed limits of 70 km/h or 80 km/h.

Consulting the table on page 11 generally yields a fairly precise idea of the best choice between mixing and segregating modes. A number of other parameters may also be examined, however:



■ **road width and nature of separators:** at a given traffic volume and speed, the usable width will significantly influence the level of service provided to cyclists. For example, even with light motor traffic, a narrow one-way street with uncrossable kerbs is often very uncomfortable for cyclists, who can neither overtake nor be overtaken in good conditions;



■ presence of **speed calming features** for motor vehicles (for example, a pinchpoint with cycle by-passes on either side);



■ **sloping roads** that in the upward direction increase the speed differential between cars and bicycles, potentially justifying segregation even if traffic is light;



■ **extended or concentrated rush hours:** special measures may be considered for roads on which motor and cycle traffic is either greatly spread out over the course of the day, or on the contrary, concentrated in a few rush-hour periods (e.g. commuter traffic);



■ **the share of heavy goods vehicle traffic** in the total measured traffic;



■ **intensity of pedestrian traffic:** the desired level of service for pedestrians and cyclists should be compared with the actual observed traffic volumes when selecting traffic management facilities.

PEDESTRIANS AND CYCLISTS - POTENTIAL SYNERGIES AND PITFALLS

Cycling network projects cannot realistically be considered without maintaining or improving pedestrian facilities on link sections and at intersections.

If this aspect is overlooked, the chosen facilities will penalise pedestrians and cyclists alike, and risk generating undesirable road uses, such as pedestrians walking on cycle facilities due to a lack of suitable, convenient pedestrian spaces, or cyclists deviating into the pedestrian space.

In special cases, where the designer intends for cyclists and pedestrians to travel and/or park in the same space (as in shared spaces, pedestrian areas or on greenways) the following points must be assessed:

- **the actual or desired flows**, particularly during busy periods for cycle or pedestrian traffic, and the compatibility of such flows with the characteristics of the planned facility;
- **existing or future urban functions in the studied spaces**: unrestricted pedestrian movements are generally incompatible with through-routes in a cycling network;
- **the desired level of service for pedestrians and cyclists**: backbone links in cycling networks and spaces with dense pedestrian traffic are generally poorly suited to mixed pedestrian and cycle traffic, especially when they carry significant flows and play a role in ensuring efficient, comfortable travel;
- **any potentially effective alternative routes** with segregated pedestrian and cycle traffic (involving modifications to roadway and parking footprints, or to the motor vehicle traffic plan, for example).





4. DESIGN A CYCLE-FRIENDLY TRAFFIC PLAN

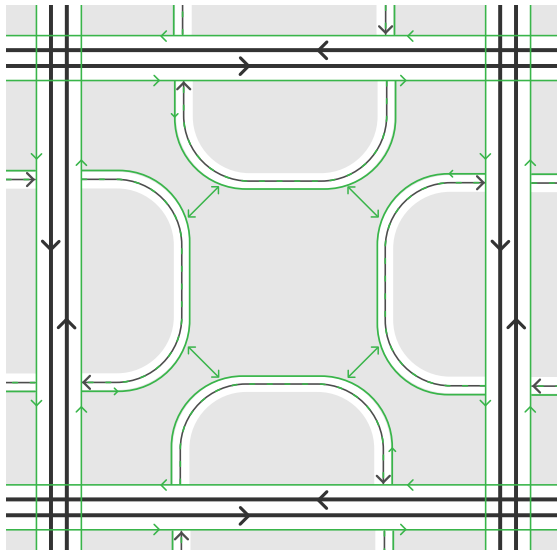
The **traffic plan** defines how traffic is organised among all users in a particular area, consistent with the general guidelines established by transport policies.

This plan must be adapted to **restrict motor transit to a few main roads** equipped with segregated cycle facilities.

Most of the network will ideally consist of low-traffic roads with traffic-calming areas (e.g. 30 km/h zones, pedestrian-priority zones or pedestrian areas), with contraflow cycling systematically permitted.

This reduction in the road network's permeability to motor traffic may be achieved by acting on the following levers:

- reconfiguring some roads as **one-way or no-through roads** for motor traffic;
- **organising these one-way roads** to deter motorised through-traffic and ensure that they are used for local service traffic only;
- **reducing the motor traffic capacity of roads** in favour of additional space assigned to active transportation modes.



motorised
through-traffic
route



dedicated cycling
route: cycle path,
contraflow cycling,
no-through road
except for cycles



route shared by
cycle traffic and
motorised local
service traffic

The above diagram illustrates the basic principles of a traffic plan that benefits cycle and pedestrian movements as well as local quality of life:

- motorised through-traffic is restricted to a few main roads equipped with segregated cycle facilities;
- motorised local service traffic uses calmed streets with contraflow cycling;
- the mesh is designed to be porous only to active transportation modes.



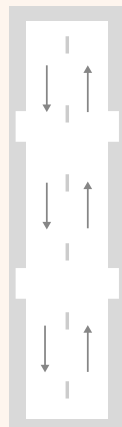
FOCUS ON CONTRAFLOW CYCLING - A CORE FEATURE OF THE TRAFFIC PLAN



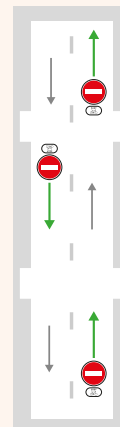
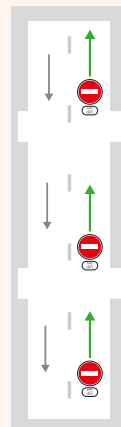
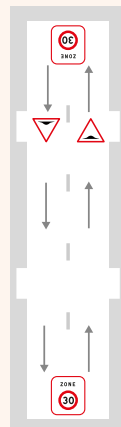
⊗ 30 km/h zone with two-way travel for all, with traffic-calming measures (e.g. pads or mini-roundabouts): reduces vehicle speeds but remains attractive for motorised through-traffic

≈ Contraflow cycling: only partially reduces motorised through-traffic

✓ Head-to-tail contraflow cycling: effectively reduces motorised through-traffic



état initial



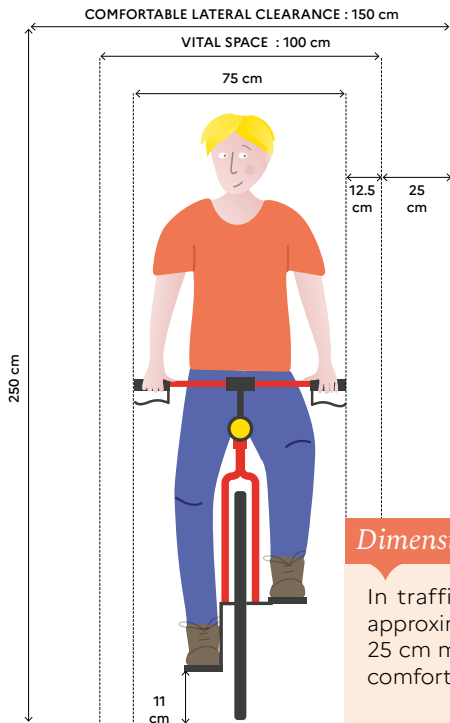


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5. PROPOSE EFFICIENT, STRUCTURAL FACILITIES

When developing backbone links in a cycling network, it is essential to **size infrastructures according to the target modal share for the area in question.**

Particular attention must be paid to the **accessibility and quality of use of pedestrian routes**, which must be comfortable, appealing, and easily detected and identified, failing which conflicts of use with cycle facilities are likely to occur.



Dimensions of a moving cyclist

In traffic, a cyclist occupies a dynamic space approximately 1 m in width, to which an additional 25 cm must be allowed on either side, to provide comfortable lateral clearance.



Developing roads for cyclists: A legal requirement

In France, the Mobility Policy Act ([loi d'orientation des mobilités](#)) reiterates the requirement for road network managers to implement cycle facilities when renovating roads. **In urban environments, this requirement is unconditional**, and the Act stipulates the types of facility that can be created. Outside built-up areas, road managers are required to assess the need for such facilities, as well as their technical and financial feasibility, working in cooperation with the mobility organising authority. This assessment must be made public.

RÉFÉRENCES

[Articles L 228-2, L 228-3 et L 228-3-1 du Code de l'environnement](#) (the French Environmental Code)

Attractive cycle paths

A **continuous, well-meshed network of efficient cycle paths** is an essential component of any cycle-friendly area. Most cycle paths run alongside main roads, on which mixed traffic is generally inadvisable. As long as they deliver a high level of service to all users, they act as an incentive to travel by bicycle.

A cycle path is a carriageway for the exclusive use of bicycles and tricycles, as well as motorised personal mobility devices. It is **segregated** from the main carriageway and pavement by a physical barrier, the dimensions of which vary according to circumstances. This segregation makes these facilities particularly popular with users for whom proximity with motor traffic is problematic.

Adequate width to satisfy capacity and comfort requirements

Providing infrastructures with a capacity consistent with the target modal share for the area in question is essential.

Cycle paths must be wide enough to:

- **enable users to overtake cycles**, including larger models such as cargo bikes or bicycles towing a trailer;
- **allow two-abreast riding**, for greater sociability and to make it easier to accompany children;
- **allow traffic to flow smoothly on link sections** and accommodate any build-up of cycles near intersections.

It is also important to maximise the cycle path's usable width by ensuring uniform use of materials and by managing the heights of kerbs alongside the path.



Paris: One-way cycle path wide enough to allow two-abreast cycling

Note

The desired width for one-way cycle paths is **2.5 m (minimum 2 m)**.

Lanes less than 2 m wide should be avoided as they make two-abreast riding and overtaking uncomfortable or impossible.

ONE-WAY CYCLE PATH

| Desired cycle traffic (daily in each direction) | Minimum usable width |
|---|----------------------|
| 0 - 1,500 | 2 m |
| >1,500 | 2.5 m |

Note

The desired width for two-way paths is **3.5 m (minimum 3 m)**.

If very high cycling flows are anticipated, the width of the two-way cycle path should ideally be increased to 4 m, enabling two-abreast cycling in both directions.

If the expected cycling traffic is very light (i.e. a few hundred cyclists per day), particularly in interurban areas, the width may be reduced to 2.5 m, provided the cycle path's verge is cyclable and tolerant to cyclists departing from their normal trajectory.



Nantes: Two-way cycle path alongside the main carriageway

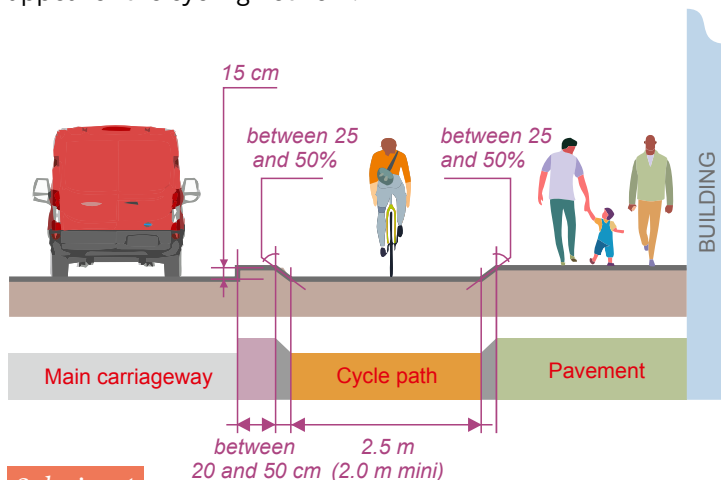
TWO-WAY CYCLE PATH

| Desired cycle traffic (daily in both directions) | Minimum usable width |
|--|----------------------|
| 0 - 1,500 | 3 m |
| 1,500 - 3,000 | 3.5 m |
| > 3,000 | 4 m |

Clear, legible and error-tolerant segregation of the cycle path

Separation between the cycle path and main carriageway

The cycle path is segregated from the main carriageway by a physical barrier, the nature and dimensions of which vary according to circumstances. This segregation increases cyclists' perceived safety, which in turn enhances the appeal of the cycling network.



Solution 1

Simple separator: this separator may have no other purpose than to physically prevent motor vehicles from driving, stopping or parking on the cycle path. A 20-50 cm wide kerb that protrudes 15 cm above the main carriageway will be effective in most cases. We recommend chamfering this kerb on the cycle path side. Ensure that this separator is clearly perceptible to all users, and does not impair cyclist safety.

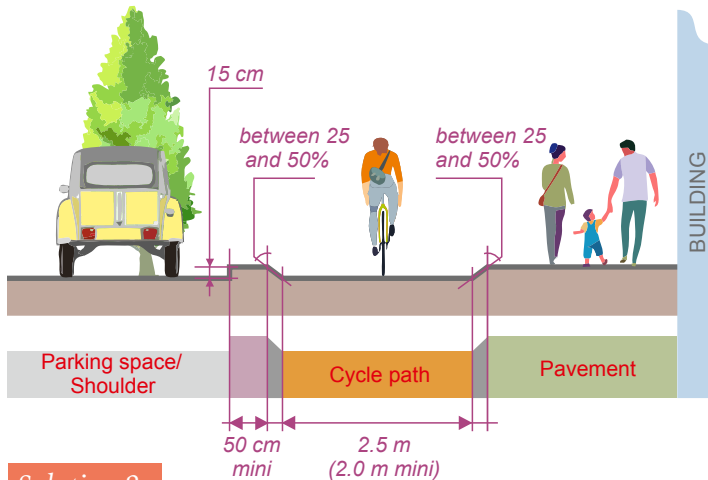
THE SHOULDER MAY CONTAIN:



A holding area for a pedestrian crossing



A grassy space



Solution 2

Separating shoulder: Other functions may be assigned to a shoulder that segregates the cycle path from the main carriageway, including road signs, street furniture, vegetation, bus stops, parallel car parking, etc. Where used for parallel car parking, ensure that the separator defines a buffer space at least 50 cm wide, to reduce the risk of 'dooring' (i.e. collisions between a cyclist and a vehicle door being opened).



A public transport stop



Cycle parking

Separation between the cycle path and pedestrian routes

The cycle path may be set level with the carriageway, with the pavement, or at an intermediate level. Consequently, the pavement and cycle path may be on different levels. This difference aids clear identification by pedestrians (including visually impaired pedestrians) and limits conflicts between pedestrians and cyclists. Chamfered kerbs (with a gradient of 25-50%) are recommended in such cases, to provide tolerance for trajectory deviations and to avoid causing falls. Chamfered kerbs also increase the cycle path's 'usable width'.

If the cycle path is at pavement level, a raised, double-chamfered kerb may be installed to more clearly demarcate the boundary between spaces.

As well as separating the two spaces, creating a visual contrast between the cycle path and pavement surface provides clearer legibility of the facility for all users.

This visual contrast should not imply a difference in user comfort, which must be maintained for pedestrians and cyclists alike.

LEARN MORE...

[8 recommandations pour réussir votre piste cyclable](#)

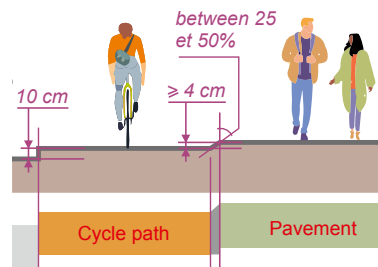
(Eight recommendations for a successful cycle path). www.cerema.fr

Guide des pistes cyclables (Cycle path guide). Cerema, publication pending



©Florimond Berthou

Chamfered separation between the cycle path and pavement.



Chamfer: Slanting kerb edge to avoid presenting a vertical profile

Greenways - An essential link in suburbs and rural areas

A greenway is a road reserved exclusively for users of non-motorised vehicles and motorised personal mobility devices, pedestrians, and in some cases, horse riders.

They are suitable only where the **anticipated density of cyclist and/or pedestrian use on the planned route is moderate to low**.

They may also be used if the decision is made to decrease the level of service for cyclists and pedestrians on an isolated section, such as a crossing that will carry mixed pedestrian and cycle traffic to lower costs.

Nevertheless, greenways may have a place in a **main cycling network and facilitate everyday cycle mobility**, particularly for cyclists **in suburban and rural areas**.

LEARN MORE...

Certu, [*La voie verte, maillon d'un réseau cyclable urbain et piéton*](#) (Greenways in urban cycling and pedestrian networks) (information sheet). 2013



In addition to complying with the definition in the French highway code, designers should seek the following characteristics:

- physical segregation from the road network;
- few residents' entrances;
- few intersections with the road network;
- comfortable ride, in most cases opting for an asphalt surface

DECISION-MAKING GUIDE TABLE BASED ON GERMAN RECOMMENDATIONS

(source ERA)

| COMBINED PEDESTRIAN + CYCLIST TRAFFIC (NUMBER OF DAILY PASSAGES) | MINIMUM GREENWAY WIDTH (IN M) |
|--|-------------------------------|
| 1,000 AND LESS | 3 M |
| 1,300 | 3.5 M |
| 1,600 | 4.0 M |

Cycle lanes - For moderate cycle and motor traffic

A cycle lane is a **traffic lane for the exclusive use of bicycles and tricycles**, as well as motorised personal mobility devices. It may be suitable for situations **in which the desired cycle traffic and motor traffic is light to moderate**. Note that cycle lanes are often perceived by cyclists as being less safe and less appealing than a good quality cycle path.



Cycle lanes must be a minimum of 1.50 m wide, excluding markings. A width of 2 m is preferable, to allow overtaking if the cycle flow is significant. If the road has parallel parking, an additional 0.50 m buffer zone must be included, to make car door opening and parking manoeuvres less hazardous.

LEARN MORE...

Cerema. [Les bandes cyclables](#) (Cycle lanes) (information sheet). 2015



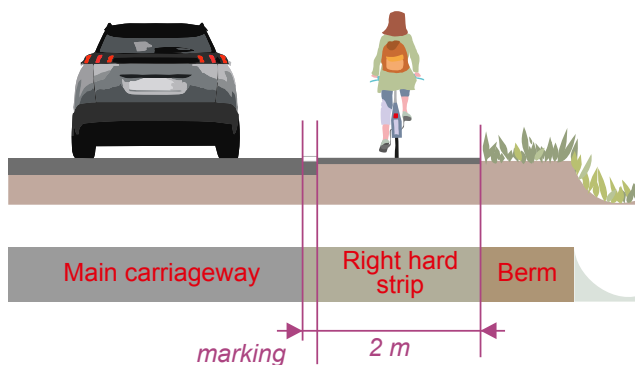
FOCUS ON CYCLE FACILITY MAINTENANCE

Regular maintenance is essential, in order to maintain the level of service provided by cycle facilities, failing which they may be abandoned by cyclists. This involves:

- frequent checks by monitoring teams;
- use of maintenance defect reporting tools by cyclists;
- mechanised maintenance (by sweepers and/or scrubbers) using equipment suited to cycle path widths;
- hedge cutting and mowing operations;
- unscheduled emergency roadworks following heavy rain.

Right hard strip

A right hard strip is an obstacle-free strip running contiguous to the carriageway, incorporating additional width to accommodate markings, as well as a stabilised shoulder, which may or may not be surfaced.



It may be bounded by a grassy berm or a pavement, and performs multiple functions:

- safety functions, by enabling vehicles to recover after deviating from their normal trajectory, or allowing collisions to be avoided by swerving to the side;
- allowing vehicles to stop more easily, which is not permitted on a cycle lane;
- carrying pedestrian traffic;
- facilitating maintenance operations on roads and related facilities.

A fully-surfaced right hard strip, sometimes referred to as a **multi-purpose strip**, may also be used by cyclists (cf. [article R.431-9 of the French Highway Code](#)).

It should only be used as a cycling solution on roads with a motor traffic volume **less than 4,000 pcu/day**. A usable width of **2 m** is recommended for such strips.

Roadways without centrelines (Kernfahrbahn)

Roadways without centrelines (Kernfahrbahn) are a special application of the right hard strip. They consist of a narrow carriageway with no side markings, on which the edge lines are positioned closer to the centre. Motor vehicles travel along the two-way central lane, while cyclists use the surfaced part of the verge known as the edge strip. The portion of the road designated for motor vehicles is too narrow to allow passing, as a result of which they deviate onto the edge strip to pass oncoming vehicles, after checking that there are no nearby cyclists.



Operating principle of a roadway without centrelines (Kernfahrbahn)

LEARN MORE...

Cerema. [La chaussée à voie centrale banalisée](#) (Roadways without centrelines (Kernfahrbahn)) (information sheet). 2017

The level of service provided to cyclists on a roadway without centreline is typically lower than on a cycle path or cycle lane. This is because motor vehicles are by default allowed to drive (while passing), stop and park on the edge strip. Pedestrians may also use the edge strip. This type of facility should therefore only be considered after examining all the alternative solutions for accommodating cyclists.

MOTOR VEHICLE DETERRENTS - A LAST RESORT

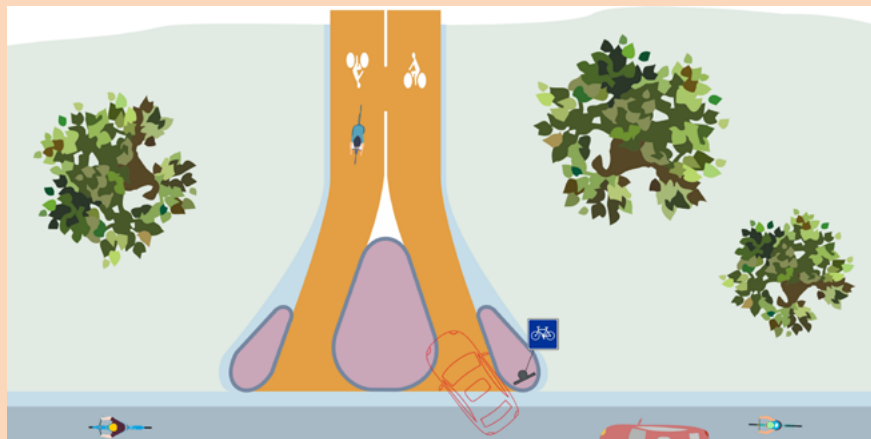
Installing a motor vehicle deterrent device at the entrance to greenways and cycle paths restricts access by motor vehicles to cycle facilities from which they are excluded.

Note, however, that the risk of unauthorised users intruding onto greenways and cycle paths is generally overestimated.

Such measures should not therefore be systematically included when designing facilities. They should only be considered if unauthorised uses are observed, after weighing up the social acceptability of such uses and the constraints of having a physical barrier that can hamper cyclists.

In addition to the dangerousness of some installations and the inconvenience caused to pedestrians and cyclists, they generate significant capital and operating expenditure costs for local authorities (for general wear-and-tear upkeep, damage repairs, etc.).

System of islands that physically deny motor vehicle access to the cycle path



LEARN MORE...

Cerema. [Les dispositifs anti-accès motorisés](#). (Motor vehicle access denial solutions). 2017



6. ORGANISE COHABITATION WITH MOTOR VEHICLES IN TRAFFIC-CALMED STREETS

Traffic-calming areas are streets or groups of streets in which motor traffic volumes and vehicle speeds are low enough to generally allow cyclists and motorists to travel in the same space.

30 km/h zone with light motor traffic



A 30 km/h zone is a section of street, or a group of sections, subject to a 30 km/h speed limit. Contraflow cycling is permitted in all such streets, other than in exceptional cases justified by the manager. Facilities in the zone must be consistent with the applicable speed limit.

In 30 km/h zones with **light traffic (<4,000 pcu/day)**, there is generally no need for segregated facilities such as cycle lanes or paths, except in special circumstances, such as:

- motorised traffic calming measures;
- HLS and main cycling networks;
- sloping roads that in the upward direction increase the speed differential between cars and bicycles.

Where traffic volumes exceed 4,000 pcu/day, it is generally advisable to separate cycle traffic and motor traffic, or to adjust the traffic plan to decrease the appeal of motor traffic in the street being developed.

LEARN MORE...

Cerema. [Aménager des rues apaisées](#). (Designing traffic-calmed streets) Knowledge series. 2020



30 km/h pedestrian-priority zone with light motor traffic

A pedestrian-priority zone is a street or group of streets subject to a 20 km/h speed limit. In such streets, pedestrians are entitled to walk, but not stop, on the carriageway, and have priority over vehicles. In these areas, cyclists must therefore adjust their speed to match the priority pedestrian traffic.

Contraflow cycling is permitted in all streets in pedestrian-priority zones, other than in exceptional cases justified by the manager.

Facilities in the zone must be consistent with the applicable speed limit. To make a pedestrian-priority zone attractive to both pedestrians and cyclists, the motor traffic volume should be limited (to <2,000 pcu/day).

LEARN MORE...

Cerema. [Aménager des rues apaisées](#). (Designing traffic-calmed streets) Knowledge series. 2020



Bicycle boulevard

A bicycle boulevard is a section of road, or a group of sections that are part of a structural cycling network, on which the only motorised traffic is local service traffic.

The motor vehicle traffic plan must be revised to eliminate through-traffic and ensure that residual local service traffic is light (less than 1,000 pcu/day in each direction of travel).

Bicycle boulevards must be developed in a manner consistent with a posted

speed limit of 30 km/h or less. They are designed to be used by significant numbers of cyclists of all kinds, allowing them to pass and overtake other cyclists, and to ride two-abreast, including in the rare cases when they are overtaken by motor vehicles.

Pedestrian area

A pedestrian area is a street or group of streets temporarily or permanently designated for pedestrian traffic. Cyclists may also ride through pedestrian areas in both directions (unless otherwise stipulated by provisions introduced by an authority with police powers) on condition that they travel at walking pace and do not cause inconvenience to pedestrians. In most cases, such areas no longer have a place in a primary cycling network.



LEARN MORE...

Cerema. [Aménager des rues apaisées.](#) (Designing traffic-calmed streets). Knowledge series. 2020

BUS & CYCLE LANE

A bus & cycle lane is a space shared by cyclists and buses. This wide lane offers a degree of comfort to cyclists, provided bus frequencies and speeds are low.

The minimum width required in order to open up a bus lane to cycles is:

- 3.20 m to 3.50 m for an open bus lane (with an absolute minimum of 3 m);
- 4.50 m for a one-way closed bus lane;
- 6.30 m for a two-way closed bus lane.



Bus and cycle lanes offer a compromise, subject to certain conditions.

In built-up areas, the legal requirement for road managers to implement cycle facilities when renovating roads may be satisfied by opening up a bus lane to cyclists. This option is only possible if the area available for cycle facilities is insufficient; in addition, the bus lane must be wide enough to allow cyclists to be overtaken in normal safety conditions, i.e. with a 1 m lateral clearance.

REFERENCE

[Article L. 228-2 du Code de l'environnement](#) (the French Environmental Code)

LEARN MORE...

Certu. [Vélos et transports publics, partage de la voirie](#) (Road sharing by bicycles and public transport) (information sheet). 2012



7. FOCUS ON INTERSECTIONS

Intersections are where user interactions and potential conflicts tend to be concentrated. Wherever possible, junctions must be designed to comply with the following principles:

- **provide users with mutual visibility;**

Mutual visibility must be ensured on the approach to the junction, in particular by removing obstacles (for example, by removing motor vehicle parking spaces 5 m upstream of pedestrian crossings (see inset), managing vegetation, etc.

- **decrease vehicle speeds;**

Imposing tight bends on motor vehicles help to **control their speed during turning movements**. The turning circles of larger vehicles must nevertheless be taken into account. If such vehicles are rare, it may be preferable to address their needs by providing areas that can be crossed in exceptional circumstances, rather than including them in the design basis of roads.

- **make junctions easy to read;**

Easily-read junctions give users an accurate, readily-understood representation of the behaviour required of them, in terms of speed, trajectory, priority schemes, etc. This legibility naturally leads to appropriate behaviour by users of all modes of transport: suitable speeds, visual checks when crossing the junction, etc.

■ maintain route continuity;

Unless they are grade-separated, cycle facilities cannot be made absolutely continuous at junctions.

However, it is possible to achieve relative continuity of routes by using a different-coloured surfacing material to that of the main carriageway, or failing that, by means of horizontal markings.

■ provide cyclists with the most efficient trajectories possible;

Trajectories intended for cyclists should be as direct as possible. Facilities that require cyclists to deviate significantly from the most direct route would not be considered credible, causing them to be shunned by most users.

It is also important not to assume that cyclists and pedestrians behave similarly.

■ reduce the number and size of user interaction areas;

These areas are generally where cyclists must pay closest attention, and are most exposed to road traffic risks.

Decreasing the number and size of such areas, typically achieved by simplifying interchanges, reduces cyclists' risk exposure accordingly.

■ adopt a suitable priority scheme that does not penalise cyclists.

For a cyclist, restarting from a standstill demands a physical effort equivalent to riding 75 to 100 m. It is therefore essential to limit situations that require cyclists to stop, wherever possible giving cycle facilities priority at intersections. Accordingly, the cycle paths in an HLS cycling network generally have priority over cross-traffic. Without claiming to be exhaustive, this section includes **three examples** showing possible junction treatments consistent with these principles.



No motor vehicle parking less than 5 m upstream of pedestrian crossings

In France, the Mobility Policy Act ([loi d'orientation des mobilités](#)) prohibited the provision of motor vehicle parking spaces less than 5 m upstream of pedestrian crossings when carrying out road development, renovation or repair works. This legislation also stipulates that compliance works must have been completed by 31 December 2026. This requirement may be harnessed to replace motor vehicle parking spaces with cycle parking facilities.

REFERENCE

[Article L.118-5-1 du Code de la voirie routière](#) (the French Highway Code)

Through-pavement/path

At intersections between a busy through-road and a road with only light traffic, allowing a cycle path to continue through the junction by combining it with a through pavement can be a good solution. A through-pavement is an extension of the pavement that runs across the carriageway of a street at an intersection. Unlike a pedestrian crossing, a through-pavement provides pedestrians with a genuinely continuous route, with no grade change.

The pavement cuts through the carriageway, physically obliging road users crossing it to give way to pedestrians.

THROUGH-PAVEMENT CROSSING A NON-PRIORITY ROAD

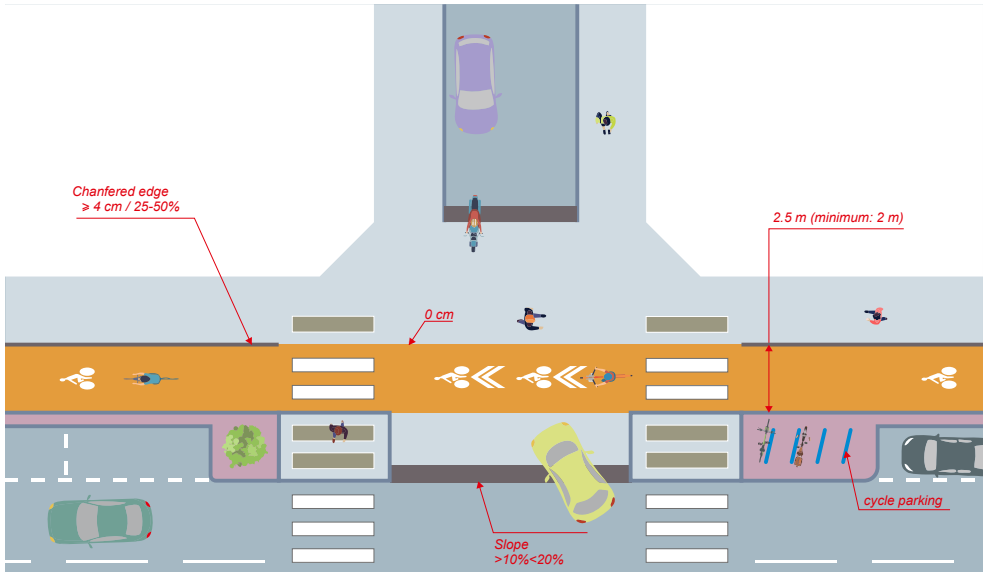
BEFORE



This arrangement reverses the usual "priority" logic.

In the same way, and with no need for special signage, this solution gives cyclists priority status and a truly continuous at-grade cycle path. Like the pavement, the adjacent cycle path remains at the same height while crossing the non-priority road.

AFTER



Signal-controlled junction with diamond islands

This type of junction operates according to the following principles:

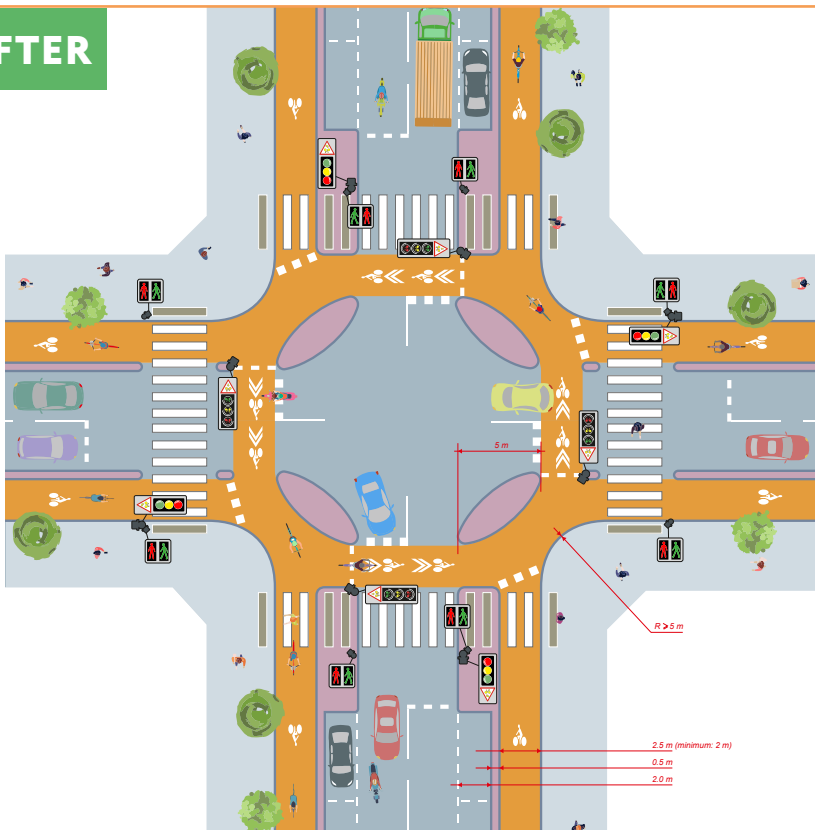
- right-turning cyclists are physically segregated from the motor traffic flow by the diamond island;
- the diamond island dampens the speed of turning movements by vehicles, which must give way to cyclists;
- the advanced position of the cyclist traffic light enhances their visibility, allows cyclists to start moving before motor vehicles, and creates a comfortable holding area for cyclists that shortens their crossing;

TREATMENT OF A SIGNAL CONTROLLED JUNCTION WITH DIAMOND ISLANDS



- cyclists perform left-turns in a two-step procedure;
- cyclists entering the circular roadway must give way to cyclists already on it;
- the cycle path is positioned such that lanes are aligned orthogonally, providing superior mutual visibility (as other users are best seen when positioned at an angle of 90° to the right or left). Space permitting, this arrangement can also be used to create an approximately 5 m holding area between the main road and the cycle path (to avoid obstructing vehicles continuing straight on);
- the cyclable crossings are indicated by cyclist pictogram and 'sharrow' markings.

AFTER

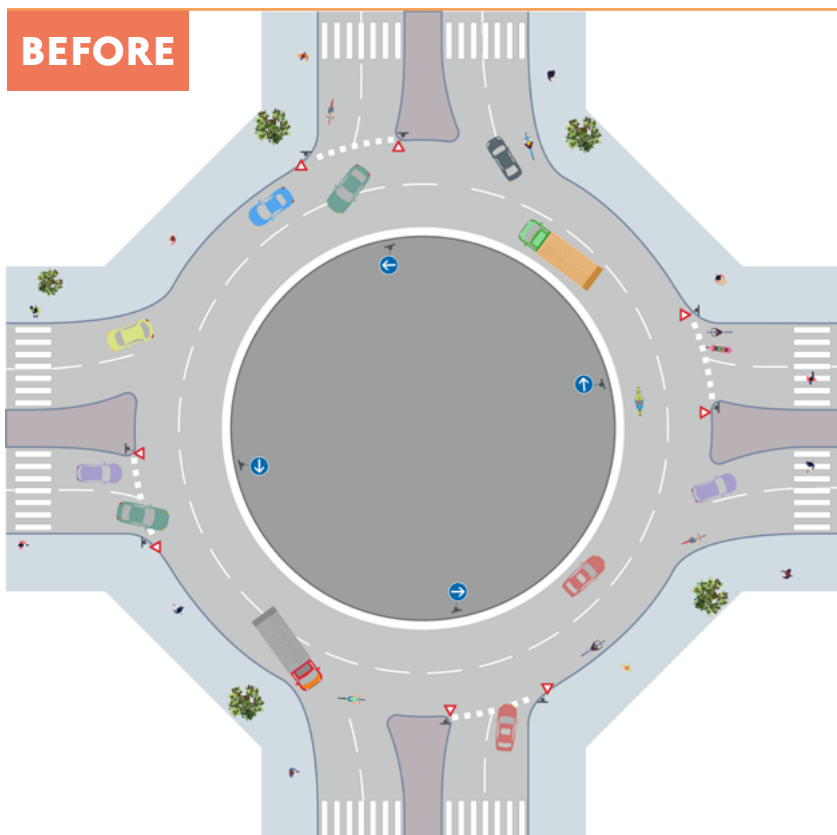


Roundabout with islands in the circular roadway

Where the traffic volume justifies having equipped the branches of a roundabout with cycle paths on the approach to the roundabout, it is also necessary to maintain the continuity of those cycle paths as cyclists cross the roundabout. In such cases, we recommend creating a roundabout with islands in the circular roadway, preferably reassigning part of the circular roadway to the cycle path and islands.

The following operating principles apply:

- the roundabout is ringed by a one-way or two-way cycle path that has priority over the motor traffic flows;

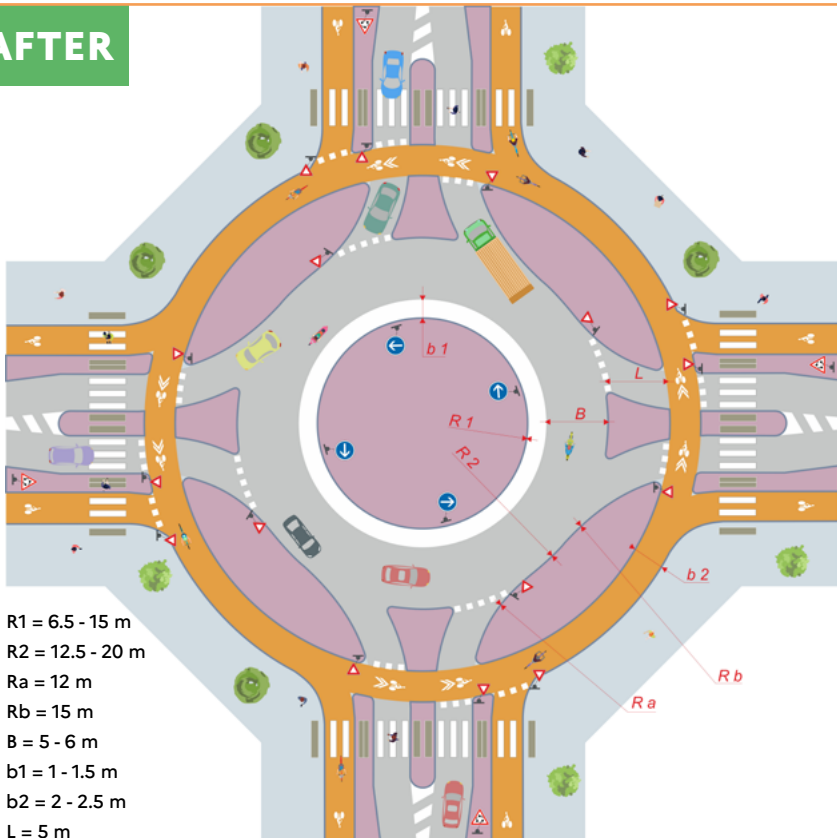


- the islands set inside the circular roadway allow a vehicle to wait while a cyclist passes. They generally also help to calm motor traffic speeds and align trajectories orthogonally;
- the turning circles for motor traffic have a diameter of 12 m at the entrance to the roundabout, and 15 m at its exit;
- the roundabout is treated by creating islands in the circular roadway. In the example shown below, cyclists riding on the orbital cycle path have priority over vehicles entering or exiting the roundabout.

LEARN MORE...

Cerema. [Véloroutes et intersections : quel régime de priorité ? quel aménagement ?](#) (Cycle routes and intersections - Priority schemes and cycle facilities) Information sheet 40. 2019
Cerema. Guide des pistes cyclables (Cycle path guide), publication pending.

AFTER





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8. MODIFY PARKING PROVISION

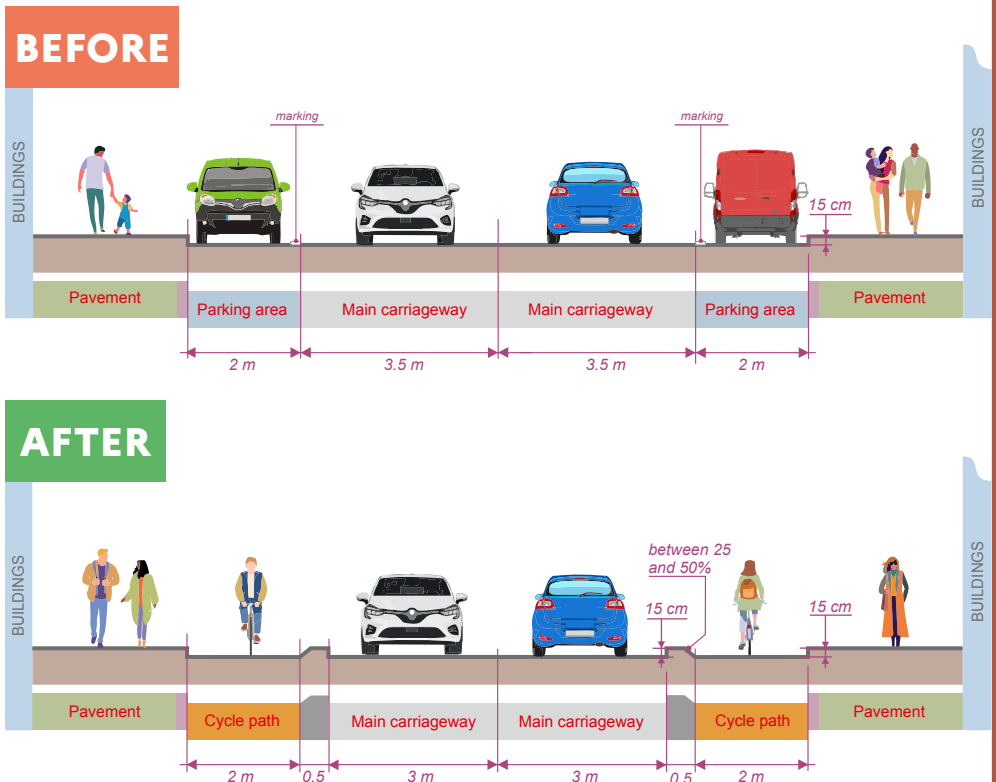
After decades of pro-car development policy, and despite the shift initiated by many municipal authorities, car parking still occupies a significant fraction of public space. To allow more space for active transportation and encourage mode shifting, while improving overall transport safety and the living environment, it is crucial to consider scaling back motor vehicle parking and greatly expanding the number of cycle parking spaces.



An ambitious parking plan that reduces onstreet motor vehicle parking

The **parking plan** accompanying mobility planning documents is the principal tool for achieving these goals, at municipal or neighbourhood level. One practical measure arising from the parking plan is a reduction in onstreet parking, which is an essential prerequisite for developing the use of bicycles. This reduction:

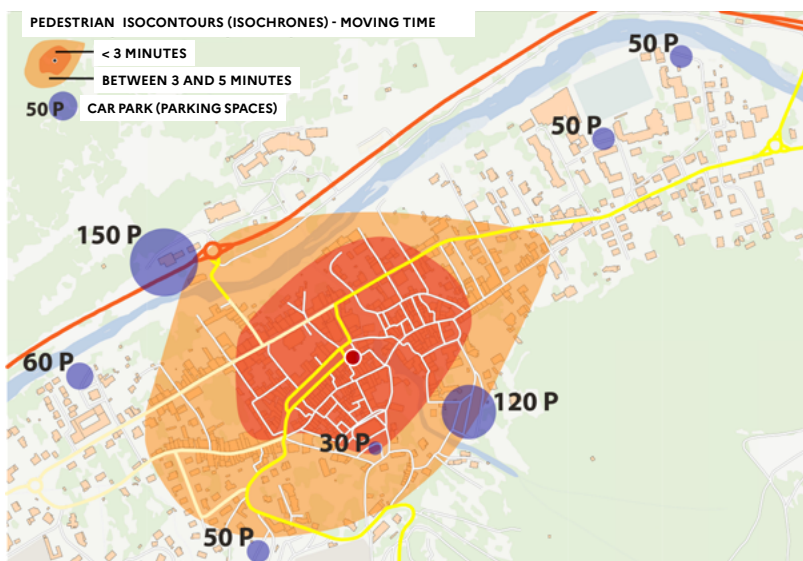
- frees up space in which to create good-quality cycle facilities;
- limits potential obstructions to visibility, which are dangerous for crossing pedestrians;
- decreases the risk of 'doring' incidents;
- makes cars less attractive for short trips.



Reorganised parking around urban centres

Reductions in the number of car parking spaces in city centres can be advantageously offset by optimising the offer in suburbs.

This suburban offer must be made particularly legible for motorists, to facilitate its use (via location, availability, and pedestrian direction signing) and in the case of more remote facilities, encourage intermodality (via public transport or bike sharing services, for example).



Map showing the various car parks in Florac, and their distance from the town centre.

Example

In the above diagram, the three-minute and five-minute walking time isocontours overlaid onto the location of parking facilities show the parking capacity near the town centre. In this case, two 150- and 120-vehicle parking facilities at the limit of the five-minute walk contour should be preferred. This configuration offers justification for reorganising town centre parking to provide more spaces for pedestrians, cyclists and local living.

More cycle parking

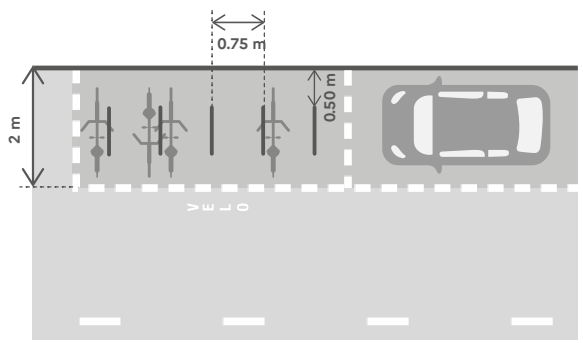
Cycle parking is an essential component of any cycling infrastructure policy. This issue may be addressed at municipal scale or considering a broader urban area, with the aim of offering parking solutions at users' homes (in residential neighbourhood, apartment buildings, etc.), at popular destinations (e.g. shops, schools, public facilities, cultural institutions, workplaces, etc.), in public spaces and at interchanges.

The legal requirement to remove large numbers of motor vehicle parking spaces located immediately upstream of pedestrian crossings by the end of 2026 offers a golden opportunity to massively roll out cycle parking while also improving road safety.

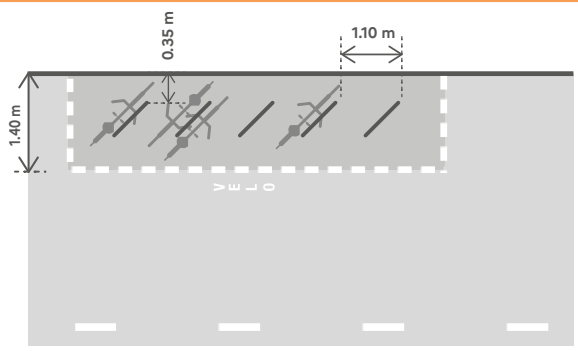


In order to fulfil cyclists' actual needs, cycle parking facilities must be easily visible, practical, accessible and easy to use. They should ideally be located near to or at the end of the cyclist's route. The distance from the cyclist's destination to the nearest cycle parking facility influences its use. It is therefore important to develop a coherent cycle parking offer, matched to volume requirements, failing which, large numbers of cycles are liable to be chained up in inappropriate locations, potentially representing a hazard to other public space users.

PERPENDICULAR ORGANISATION



ANGLED ORGANISATION



Secure bike locker replacing a motor vehicle parking space

The anchor system must allow the bicycle frame and at least one wheel to be attached.

Ideally, diversified parking facilities should be provided, suitable for the various types of cycle currently experiencing a boom in popularity, including two- and three-wheel cargo bikes, longtail bikes, children's bicycles, and bikes with trailers.



longtail bike



cargo bike

| | TWO-WHEEL BIKE | THREE-WHEEL BIKE | LONGTAIL BIKE |
|--------|----------------|------------------|---------------|
| LENGTH | 2.60 m | 2.30 m | 2.00 m |
| WIDTH | 70 cm | 90 cm | 50 cm |

LEARN MORE...

Cerema. [*Le stationnement sur l'espace public : stratégie et préconisations d'aménagement.*](#)

(Parking in the public domain - Development strategy and recommendations)

References series. 2021

What Cerema offers you

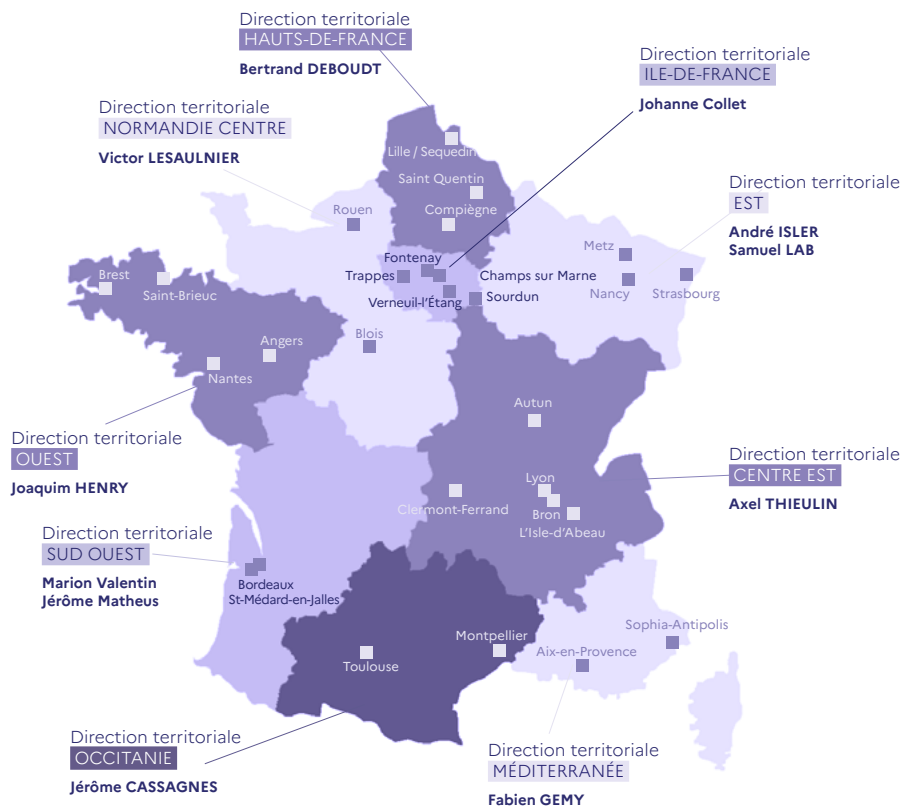
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Cerema has developed an integrated offer to support such cycle facility projects.

Drawing on our expertise, we assist contracting authorities and provide training, assessments, and support with making existing solutions sustainable, as well as safety audits for road improvements and facilities in public spaces.

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Technical advisors



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CREATING CYCLE-FRIENDLY ROADS

SUCCESS FACTORS



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