Certu

Infrastructure and public spaces

Moped and Motorcycle Parking in Urban Areas

English version

Liberté • Egalité • Fraternité
RÉPUBLIQUE FRANÇAISE

Ministère de l'Écologie, de l'Énergie, du Développement durable et de l'Aménagement du Territoire

Moped and Motorcycle Parking in Urban Areas

Foreword for publications translated into foreign languages

The purpose of translated documents and publications is to pass on to non-French speaking readers the French know-how set out in the original publication, whether this concerns methodologies, tools or best practices.
Original publications in French are subject to a checking process, which enables CERTU to guarantee their content. English versions do not undergo the same process, and consequently CERTU cannot be held liable for their content.
In the event of differences between the English and the original French text, the French text serves as the reference.

Reference collection

This collection includes the technical guides, methodological guides and other works that present in an educational way what the ordinary professional needs to know within a relatively broad given field. Certu guarantees the content in the French version.

Certu also publishes the following series : debates, dossiers, analysis reports.
The catalogue of publications is available from http ://www.certu.fr

Roads for all users

The safety and shared use of public highways without conflicts of interest
In 2005, the CNT (French National Transport Council), along with many contributing partners, produced a report entitled *Voirie pour Tous – Sécurité et cohabitation sur la voie publique au-delà des conflits d'usage* (Roads for all users – the safety and shared use of public highways without conflicts of interest).
This report put forward a number of ideas and approaches to road and public-space planning policy, based on the needs of different sections of society and the different uses of such spaces, rather than on their functionality alone.
The widespread approval of the report, and the many expectations it created, led the French Ministry for Infrastructure, Tourism and the Sea to ask Certu to implement an ambitious programme of action for the development and dissemination of tools and manuals that put into practice the principles outlined in this report.
The reference "*Voirie pour Tous – Sécurité et cohabitation sur la voie publique au-delà des conflits d'usage*" is thus used to identify publications in Certu collections which form part of this programme of action, and which seek to assist contractors and practitioners in meeting the required objectives in terms of quality of use of urban highways.

The CNT report is available as a CD-ROM from the CNT, and can also be downloaded from the CNT website (www.cnt.fr) and the "*Documentation française*" website.

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The working group was led by Certu (Bertrand Christian), under the authority of Benoît Hiron, director of the group *Sécurité des déplacements et usagers* (Transport and Transport-User Safety).

Note on illustrations

The pictures featured in this document are used to illustrate the text and do not necessarily represent examples that should be followed.

Numbers in square brackets  [no.] refer to the bibliography at the end of the document.

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Introduction

Powered two-wheelers (PTWs) are an increasingly common sight in towns and cities, and can be categorised into different vehicle families[1] : standard motorcycles, light motorcycles and mopeds. The lightest such vehicles tend to be well suited to getting around in the restricted space of towns and cities centres.

Their ever-increasing numbers can, however, cause certain problems in the way roadspace is shared ; such as, for example, improvised parking that can put other users, such as pedestrians, at risk.

PTWs can have diverse characteristics, but as far as parking and obstruction levels are concerned, the factors to be considered are relatively similar.

Certu set up a working group composed of technicians from several urban communities, the Ministry of Transport, and also representatives from motorcyclist associations.
The sharing of experiences led to the following conclusions :

- the extent to which the issue of PTW parking is addressed varies between different towns and cities ;
- the techniques and practices used also vary, especially in terms of the geometry of parking bays, the use of anchor points, signage, road markings, etc.

This document does not seek to define a proposal for a PTW parking policy ; it seeks instead to offer practical guidelines which outline the key urban planning principles for local authorities. This approach will be complemented by a document entitled *Connaître le stationnement des 2RM : méthodologie pour dresser un état des lieux* ("PTW parking : a methodology for evaluating the current situation") to be published by Certu.

Situations encountered

Here, an attempt to manage PTW parking seems to have been made.

Photo : CETE Méditerranée

[1] Please note that scooters may be classed in either category, depending on their engine size.

I - General information on powered two-wheelers and their users

PTWs have highly diverse characteristics, but as far as parking and obstruction levels are concerned, they are relatively similar.

1 – Vehicles

Their dimensions are comparable : a length of around 2.30 m for a motorcycle, and 1.80 m for a moped[2] ; and a width of around 0.70 m for both types of vehicle. However, their weight can vary considerably, with an average of 200 kg for a motorcycle and less than 100 kg for a moped.
With no reverse gear, PTWs can be difficult to manoeuvre, especially when rain causes the road surface to become slippery.
For several years now, most of the models available on the market have been relatively imposing vehicles, and their ease of manoeuvrability with the engine off has been sacrificed in pursuit of improved comfort and handling.

The use of a central stand to park PTWs is becoming increasingly rare. Manufacturers do not systematically equip their models with this feature, especially given that the weight and dimensions of such vehicles can make its use unstable. However, scooters, which were not initially equipped with a side stand, now are.
When parking PTWs, users can either make use of the more stable central stand or the side stand if they prefer. This choice is made according to the nature of the parking site, the user's experience, their physical build and the weight of the vehicle.

2 – User behaviour

In France, PTWs are subject to the French highway code, just like private cars. Although this measure appears to be immutable, it is also evident that PTWs do move around in the same way as cars. Thanks to their reduced dimensions, their handling, and their speed, PTWs offer unquestionable flexibility and ease of use. This means of transport has therefore become synonymous with speed and consistency. In light of this, both cyclists and motorcycle riders are able to park much closer to their destination, and in specially allocated bays which differ from those used by cars. In fact, very few users take the risk of parking in spaces which are also accessible by car, such as traditional parallel parking areas.

An example of improvised parking – as close as possible to the destination.

Photo : CETE Normandie–Centre

[2] When fitted with a top-case, the dimensions of certain two-wheeled vehicles can be increased as a result, especially scooters.

II – Two types of parking

1 – Organised on-street parking with a sufficient number of carefully allocated spaces can prevent a disorderly invasion of PTWs.

An example of a parking bay that has become a victim of its own success.

Here, the demand for parking outweighs the supply. Improvised parking (on the left) is occurring just behind the row of organised parking.

Photo : CETE Normandie–Centre

Two different kinds of parking bay are generally encountered :

- on-street parking, with either parallel or angled spaces ; or
- a section of the footpath converted into a specially adapted parking bay for PTWs.

2 –Indoor and outdoor off-street parking (public or private)

Local authorities can play a role in developing PTW parking provision in private car parks. For example, cities such as Marseille are stipulating that in new car parks, between 5% and 10% of the spaces available must be for PTWs, and that these be located near the security office.

PTW parking should preferably be located near car park entrances and/or the security office. Private car parks frequently offer a range of subscriptions for PTW users at different prices. It should also be noted that the surface coverings often used in indoor car parks can be very slippery.

Examples of PTW parking in private indoor car parks.

This parking bay is not specifically signed or marked as an area for PTWs.

Photo : CETE Normandie–Centre

This bay has demarcated spaces which are allocated to subscribers.

Photos : CETE Normandie–Centre

Photos : CETE Normandie–Centre

An example of a PTW bay in an outdoor car park :

A parking bay for PTWs in a company car park.

Photo : Metz City Council

III - French laws governing parking for powered two-wheelers

1 – PTW parking is an under-addressed issue.

- The PLU (local town planning act) :

  Under article 12 of the PLU, when planning permission is required, local authorities can establish the vehicle parking regulations to be applied in the construction and renovation of new buildings.
  Certain urban planning documents include provisions for parking areas reserved solely for two-wheelers in new collective housing developments. Such bays are generally for the shared use of bicycles and PTWs.

- PDUs (urban mobility plans) :

  PTWs are viewed in the same light as cars. They are not accorded any specific recognition in PDUs.

2 – The French highway code

According to article R311-1 of the *Code de la Route* (the French highway code) :

- **"moped" :** a two- or three-wheeled vehicle built with a maximum speed of 45 km/h, and an engine capacity not exceeding 50 cc for internal combustion engines, or a net maximum power output not exceeding 4 kW for other types of engine.
- **"light motorcycle" :** a motorcycle with an engine capacity not exceeding 125 cc, and a power output not exceeding 11 kW (14.6 bhp).
- **"motorcycle" :** a two-wheeled vehicle with an engine that does not correspond to the characteristics defining mopeds, and with a power output not exceeding 73.6 kW (100 bhp).
  - ⇨ MTT1 : power output $\leq$ 25 kW (34 bhp) and a power/weight ratio $\leq$ 0.16 kW/kg
  - ⇨ MTT2 : power output between 25 kW and 73.6 kW (100 bhp) inclusive.

Power-assisted pedal cycles are not classed as powered two-wheelers.

Article	*Wording*	Domain	Comments
R 417-1	*In built-up areas, any vehicle that is stationary or parked must be positioned in relation to the flow of traffic as follows : […] On the right hand side of two-way streets, except when otherwise indicated by decision of the body that is vested with police power […]*	parking direction	Parking spaces for PTWs must be positioned on either side of a two-way street, allowing users to park in the correct direction, except in specific situations decided by the mayor.
R 417- 2	*I – When the mayor decides to implement alternate-side vehicle parking, on a permanent basis, for all or part of the year, on one or more traffic lanes in the urban area, the frequency of alternation must be half-monthly […]*	alternate side parking	Alternate-side parking cannot be used to provide on-street parking for PTWs, as, unlike cars, parking such vehicles requires the installation of certain permanent facilities
R 417-10	*[…] II – Stationary and parked vehicles are considered to obstruct public passage when located : 1. on footpaths, crossings or other areas reserved for pedestrians […]*	parking on a section of pavement converted into a parking bay with facilities for PTWs.	Footpaths are reserved for the use of pedestrians. PTWs can only be parked on footpaths when a section of footpath is converted into a specific parking bay. Bay access areas and the amount of foothpath space remaining for pedestrians must be considered, and must comply with the minimum accessibility requirements for persons of reduced mobility (Part IV.3.d)
R 412-7	*All drivers must, except in moments of absolute necessity, drive their vehicle on the carriageway only […]*		
R 413-18	*When parking bays are installed on footpaths or reservations, motorists must drive in such areas only at extremely reduced speeds, and take every possible precaution to ensure they do not obstruct or harm pedestrians […]*		

3 – Police powers available to mayors

In order to be able to reprimand other vehicles that are illegally parked or illegally stopped in PTW parking areas, a traffic police by-law must be issued by the mayor.

Article	*Wording*	Domain
L 2213-2 of the *Code des Collectivités Territoriales* (laws governing local authorities and their powers)	The mayor can issue targeted by-laws in response to perceived needs in the fields of traffic and the environment : *[…] 2. Regulating the stopping and parking of vehicles, or certain categories of vehicle, and access provisions for adjoining buildings […]*	Parking prohibited for vehicles other than PTWs
L 411-1 of the *Code de la Route* (French highway code)	*Repeats Articles L 2213-1 to L 2213-6 of the Code des Collectivités Territoriales.*	

4 – Signing and marking parking bays

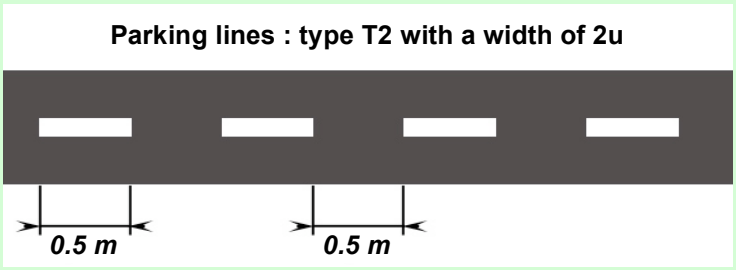
a. Road markings [1]

If road markings are used then they must respect the legal requirements concerning :

- the type of material used – slipperiness, reflectiveness, whiteness ;
- the spacing and width of the lines.

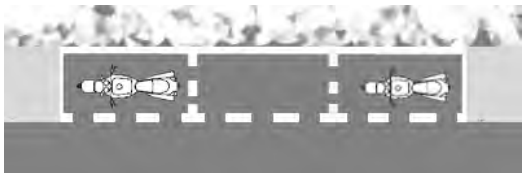
Characteristics of T2 lines

The width of the lines is defined in relation to a width "u", the value of which varies according to the type of road. A value of u = 5 cm will be adopted for marking spaces in towns and cities.



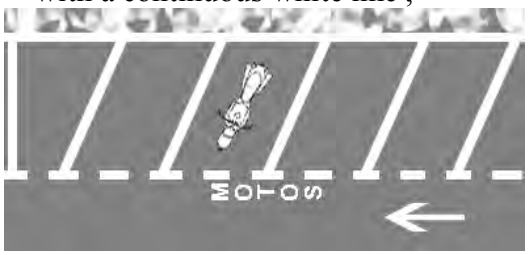
- **For parallel parking**, the division between the section of the carriageway in use and the section reserved for parking is marked with T2 broken white lines with a width of 2u.

  It is not obligatory to demarcate individual spaces. However, if demarcation is used, it must be done using T2 broken white lines with a width of 2u, or by simply using a cut-off perpendicular line.

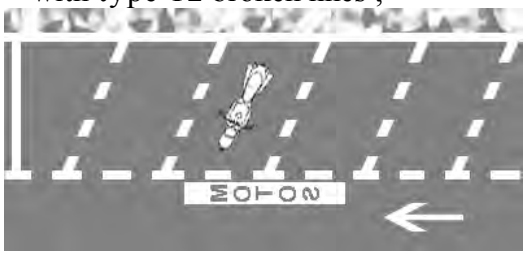

or


- **For angled or perpendicular parking**, the division between the section of the carriageway in use and the section reserved for parking is marked with T2 broken white lines with a width of 2u. Individual spaces can be demarcated in three different ways :

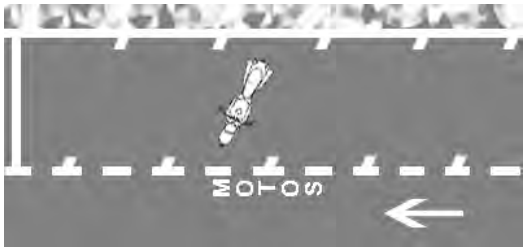
  - with a continuous white line ;



  - with type T2 broken lines ;



  - or simply with cut-off perpendicular lines.



Angled parking must be oriented at less than 90° to the road in order to favour forwards exiting from the parking spaces.

- **Worded road markings for parking bays**

  If the parking bay is to be identified with a worded road marking, then this must be as concise as possible. In France, for example, it should read "***motos***" and/or "***cyclos***" ("motorbikes" / "mopeds").
  Care must be taken when carrying out police checks and issuing reprimands, as these spaces are also available for use by mopeds, and there is also no generic pictogram for PTWs.
  The word can be positioned in the same way as the "*payant*" ("charges apply") marking often seen next to car parking spaces in France, or the "Doctor" or "Disabled" markings often encountered in the United Kingdom. The word is thus either marked on the lines themselves, or immediately adjacent to them, so that they are easily visible to road users in search of a parking space. The word can be marked either in positive white characters, or in negative characters in a white rectangle, in which the word appears in cut-out form.
   [2]
  Generally speaking, it is preferable for parking bays to be easily identifiable without the over-abundant use of signs and markings.

b. Road signs  [3]

Care should be taken to ensure that road signs do not obstruct pedestrian passage, and that they comply with the minimum accessibility requirements for persons of reduced mobility.
Signposts should be positioned so as to be visible by vehicles on the carriageway without causing obstruction.

❖ **Signing a designated powered two-wheeler parking bay**

The following sign can assist users in locating the parking bay. It can be positioned either prior to, or at the bay itself.

The C1a sign  indicates a designated parking area, and can be accompanied with a plaque specifying the direction, the distance or the type of road users concerned :

e.g. plaque M4c  and/or plaque M4d2  depicting motorcycles and mopeds respectively.

Examples of advance signage :

or

An example of on-site signage :

- **Prohibiting parking on the carriageway for vehicles other than powered two-wheelers :**

  This road sign prohibits the parking of vehicles other than PTWs on the carriageway. If this regulation is decreed by a traffic police by-law issued by the mayor, then its infringement can be reprimanded.

  Prescriptive sign B6a1
  which can be accompanied by
  plaque M9z

or

❖ **Signing the parking bay :**

- Road signs usually face the users they seek to address ; in other words, they are positioned more or less perpendicular to the carriageway. However, when signing parking bays, they must be positioned parallel to the carriageway – especially B6a signs (parking prohibited).

- If a PTW parking area is adjacent to a bicycle parking area, it is preferable to use a separating device to avoid any ambiguity of intended use (Part IV.2.f).

❖ **Direction signs to be used in instances of narrowed carriageway or modified route :**

If the position of parking facilities on the carriageway modifies the route for road users,

J4-type signs
can be usefully positioned at the beginning of the section of modified route.

However, they must be used sparingly, as they themselves can often cause obstruction or reduce visibility.
The first part of the *Instruction Interministerielle sur la Signalisation Routière* (France's official directive on road signs and markings, issued 31/07/2002) specifies that : "*single chevron signs can be used in built-up areas to indicate an isolated feature or facility which causes a narrowing of the carriageway or a modified route*". Their use is therefore restricted to circumstances in which increased perception of the parking bay is of critical importance, such as for unprotected protruding parking areas.

IV - Spatial organisation of parking bays for powered two-wheelers

1 – The issue of where to locate parking spaces

In order to define a logical plan for implementing PTW parking, it is advisable to carry out a full assessment of the current situation in terms of user needs and the different systems in use. The choice of location for the facilities is of great importance and requires several key criteria to be studied (visibility of location, café terraces, gutters and drains, feeling of safety, high demand, proximity to shopping areas or leisure facilities, etc.) [4]

Like any road user, PTW riders seek to save time by parking as close as possible to their destination.
Therefore, to optimise the use of the parking spaces created, they should predominantly be located in well-frequented areas such as town and city centres, or near locations of particular interest such as high schools, shops or leisure facilities.

An example of a shopping area in a city centre

Photo : CETE Méditerranée

In locations other than these, it is rare to see a high concentration of two-wheelers all parked in one specific place. Therefore, in order to better serve user needs, the number of proposals to create small capacity facilities should perhaps be increased.

2 – General principles

This assessment of the current situation – relating exclusively to characteristics of PTWs and their users, presented in the wider context of urban planning – allows key areas for consideration to be established with a view to defining the spatial organisation of parking bays :

a. separating pedestrians and motor vehicles ;
b. protecting the area from potential car parking ;
c. examining and considering the site's topography (crossfall/longitudinal section) ;
d. ensuring mutual visibility (see and be seen) ;
e. selecting specially adapted surface coverings (slipperiness/damage resistance) ;
f. planning appropriately for shared bicycle/PTW parking ;
g. ensuring all facilities have been logically thought out.

a. Separating pedestrians and motor vehicles

It is important to ensure that PTW users are not left to spontaneously improvise their own parking systems on footpaths and pedestrianised areas. Unorganised parking on the footpath is often a sign of inadequate infrastructure provision. The implementation of parking areas for PTWs must play a role in rectifying this situation.

The use of a car parking space :

Photo : FFMC

With no separation between PTWs and cars, the motorcycle is at risk of being knocked over by a manoeuvring driver.
PTW users thus often prefer to park away from cars, or in other words, on the footpath.
One regular, unadapted parking space only allows one motorcycle to be parked.

When on-street parking is not possible, and depending on the geometry of each individual site, a wide footpath can potentially be converted into specially adapted parking bay for PTWs (see part 5-c).
Locating parking bays near pedestrianised areas also improves access for PTW users.

b. Protecting the area from potential car parking

Demand for car parking can be so high in certain areas that it is necessary to physically protect any spaces that are designated as prohibited to cars.
Without adequate protection, PTW parking areas that do not feature anchor points are at risk of being used by cars and other vehicles. In such situations, signposts (see part 4-c) shall be erected. Alternatively, the implantation of bollards and/or posts – while not perhaps entirely satisfactory from an architectural point of view – can prove to be a sufficiently preventive measure, thus offering a simple and practical solution that can be quickly implemented.
However, in order to minimise the potential consequences for vehicles that may unintentionally leave the road, such street furniture should be used in reduced speed zones only.
It is also essential that they be visible in all conditions (night, rain, etc.) Road markings, for example, can be used for the street furniture in the parking area which can be equipped with reflective bands, at least at the start of the parking area.

An example of a parking bay with no anchor points :

Photo : CETE Méditerranée

This parking bay has no anchor points, and is situated in a 30 km/h (roughly 20 mph) zone where driving speeds are low.
The light colour and the height of the bollards makes them visible.
A signpost indicating prohibited parking for vehicles other than PTWs could be used to replace these bollards.

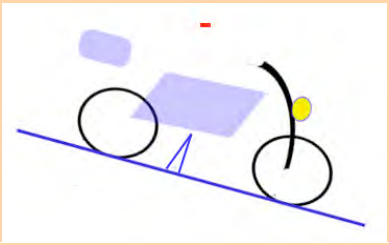
c. Examining and considering the site's topography (crossfall/gradient)

The topography of the site is an essential factor to bear in mind when considering installing PTW parking facilities, as certain crossfall and gradient values can seriously affect such vehicles' stability when stationary.
The crossfall and/or gradient of the road should therefore be exploited to favour the balance of parked PTWs.

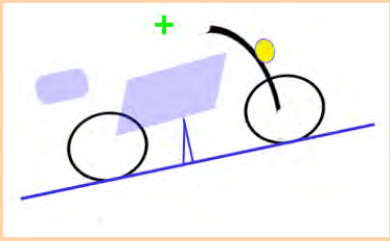
A PTW can be perfectly stable on a sloping or banked road, so long as the gradient of the slope is not too pronounced and that the position of the vehicle in the parking space allows the appropriate type of stand to be used.

The central stand :

On a gentle incline, the lightest PTWs can be supported by their central stand.
On a downwards slope, however, this type of stand cannot be used.



The stand is retracted by pushing the vehicle forwards (causing the central stand to fold up). This requires a certain degree of physical force.



The side stand :

If the PTW is perpendicular to the road's crossfall, the vehicle should be positioned with its left-hand side facing downwards as the side stand is located to the left of the vehicle (for certain vehicles and at certain angles, the use of the side stand can prove impossible).

With the downwards slope of the crossfall to the left, the vehicle's stability is improved. The vehicle must always be angled at <90° to vertical.

However, as the slope of the crossfall increases, the difficulty of the parking manoeuvres involved also increases proportionally :

- the full weight of the vehicle must be pushed forward in order to activate the central stand ;
- an inclined vehicle supported with a side stand must be pushed upright.

In this respect, it is wise not to install PTW parking bays on roads with highly pronounced gradients, even though most PTW users are aware of their own physical abilities.
As a first approach, a gradient of around 3.5% seems to be a reasonable limit not to exceed.
If values greater than this are imposed by the nature of the site, then the way the bay is organised should be carefully considered (larger parking spaces, for example), as well as the parking direction (forward exiting), in order to offer maximum assistance in manoeuvring. Providing anchor points can also help.

The type of parking provision implemented will therefore depend directly on the topography of the site. For example, parallel parking on the right-hand side of the carriageway is not recommended if the road is too convex in shape.

d. Ensuring mutual visibility (see and be seen)

It is important for PTW users to be able to see and be seen when they pull in or out of a parking space. It is therefore advisable to avoid "hiding" PTWs among parallel parked cars, as these can significantly hinder visibility (see test in appendix).

The minimum distance between car parking and PTW parking should be 5 m to allow for a minimum window of visibility.

e. Selecting specially adapted surface coverings (slipperiness/damage resistance)

In order to ensure the durability and safety of facilities, it is preferable to select a road covering that provides a **uniform and coarse surface**. This prevents the side-stand becoming stuck on protuberances, and offers good vehicle grip, especially when setting off.
Similarly, the surface's **damage resistance** should be high enough to allow it to take the weight of the vehicles, most of which will be concentrated through the vehicles' stands.

A surface dressing with many damage marks.

Photo : CETE Normandie–Centre

In this respect, the gradings used in surface dressings generally meet these two criteria, especially asphalt concretes with a 0/10 grading. The use of asphalts alone should, however, be discouraged, as, although they are hard, they are also slippery in damp conditions and are too sensitive to high summer temperatures.
If hard granulates are used, paving stones, as well as deactivated concrete can also offer interesting options that allow the facilities to be more easily identified, while also giving a feeling of comfort.

In this parking bay in Belgium, part of the surface is covered with concrete.

Photo : CERTU

f. Planning appropriately for shared bicycle/PTW parking

Two options are available if shared bicycle and PTW parking provision is desired.

- **Mixed parking :**

Signs are used to indicate that the parking bay is available to all two-wheelers ("cycles", "PTWs and bicycles", "two-wheelers", etc.)

The parking spaces are fitted with parking stands for bicycles. Preferably, these stands should also allow for the attachment of PTWs.
Parking spaces are adapted to the dimensions of PTWs, as users often fear their vehicle may be scratched by bicycles.

Example of a parking bay for all two-wheelers :

Photo : Metz City Council

- **Segregated parking on a shared site :**

In such cases, it is preferable either to use separating devices and/or to clearly sign and demarcate the parking spaces allocated to bicycles and those allocated to PTWs.
Any ambiguity surrounding the use of the bay can also be clarified by selecting different types of parking stand or anchor point, or by identifying parking spaces with distinctive signs (colours, bicycle logo, etc.)
A bicycle parking space does not need to be as wide as a space for a PTW, although it must be fitted with a parking stand.

Some examples of adjacent bicycle and PTW parking :

This parking bay features spaces for bicycles (left) with U-shaped "Sheffield" parking stands, and spaces for PTWs (above) with vertical posts as anchor points.

Here, the bicycle section (on the left) is segregated from the section for PTWs (on the right) using a separating device.

In this example, bicycles are using the PTW parking spaces despite the presence of a separating device. Cyclists seem to appreciate the wide spaces with "Sheffield" stands.

Photos : Bordeaux Urban Community and CETE Normandie–Centre

g. Ensuring all facilities have been logically thought out

When deciding to create a PTW parking bay, it is advisable to ensure that the various facilities are conceived in a coherent manner.

Photo : LREP

In this example, the two wheelers' parking area borders a bus lane which is separated from the carriageway by a dividing device that cannot be driven over.
The location of PTW parking spaces should not oblige users to make illegal manoeuvres, such as driving in bus lanes or on the footpath, in order to access the facilities.

3 – Factors to consider when selecting the type of parking provision

a. Converting disused terrain

Converting disused terrain into PTW parking is an attractive option.
A parallel parking bay for PTWs can, for example, be created in narrow roads where car parking is prohibited to ensure emergency vehicle access.

Disused sites can also potentially be transformed into parking bays, on the condition that the appropriate safety regulations are met and that other road users are respected.

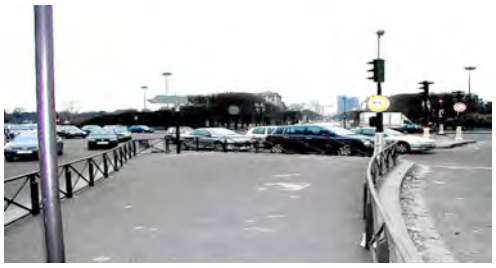


Photo : FFMC

An example of a site that could be transformed into a PTW parking bay.

b. Using or creating a "parking module" for PTWs

Providing PTW parking often requires the adaptation of parking spaces initially intended for cars.
Two basic parking modules exist, and their use is determined by the way the car parking is arranged. For parallel car parking, two spaces are required, which is equivalent to a length of

around 10 m. For angled spaces or spaces perpendicular to the carriageway, a length of around 7.5 m is required, corresponding to three car parking spaces. If necessary, these modules can always be reconverted to car parking spaces.

An example of a removable "toast rack" :

The stands are attached to rails which are then fixed to the ground.

Photo : Metz City Council

Areas of PTW parking can be installed at either end of parallel car parking areas. They must not be "drowned" in the middle of car parking spaces, as this would make the modules less visible.
It is preferable to create parking areas on both sides of the road to allow users to park in the correct direction.

c. Organising space to optimise parking capacity and ensure safe manoeuvring

Encouraging reverse parking offers certain advantages in terms of safety, such as :

- safer manoeuvring when exiting parking spaces (improved visibility) ;
- easier to move PTWs as the road's crossfall aids reverse manoeuvring with the engine off (thanks to the convex shape of the road) ;
- vehicle stability is ensured no matter what means of support is selected (central or side stand), as the weight of the vehicle and the crossfall of the road are exploited.

Angled parking on a one-way street.
The vehicle user has good visibility for joining the flow of traffic.

Photo : Ville de Paris

This moped rider has chosen not to use the allocated parking spaces because :

- *there may have been a car parked on the designated PTW spaces ;*
- *an anchor point is available on the pavement ;*
- *exiting this parking bay in reverse is dangerous ;*
- *there is no separation between cars and PTWs.*

Photo : FFMC

Given that parallel car parking spaces are often 2 m wide and that PTWs are often longer than 2 m, angled parking must be used when adapting a parking module previously allocated to cars. This measure prevents PTWs from protruding into the carriageway or onto the footpath.

It is also important to consider the vehicle's rear overhang[3], as this can encroach onto the footpath when the back wheel is resting against the kerb. A "parking block" can thus be implanted just before the gutter (see photo below). Its form, dimensions and position should not obstruct pedestrians seeking to cross the road in the absence of parked PTWs.

If the scooter's back wheel is resting against the kerb, the top-case will protrude onto the footpath. As a result, the space available to pedestrians will be reduced.

Photo : CETE Normandie–Centre

Here, an example of a "parking block" can be seen, preventing the PTW's rear wheel resting against the kerb.

Photo : CETE Normandie–Centre

As regards the optimum width necessary for PTW parking spaces, a dimension of 1.20 m perpendicular to the vehicle's axis has been shown, following tests, to be the most appropriate size in terms of both ease of use and minimal use of space.

d. Examples of geometric arrangements in different types of parking bay

Depending on the topography of each site, the following geometric arrangements of PTW parking bays are possible.

- **Angled parking**

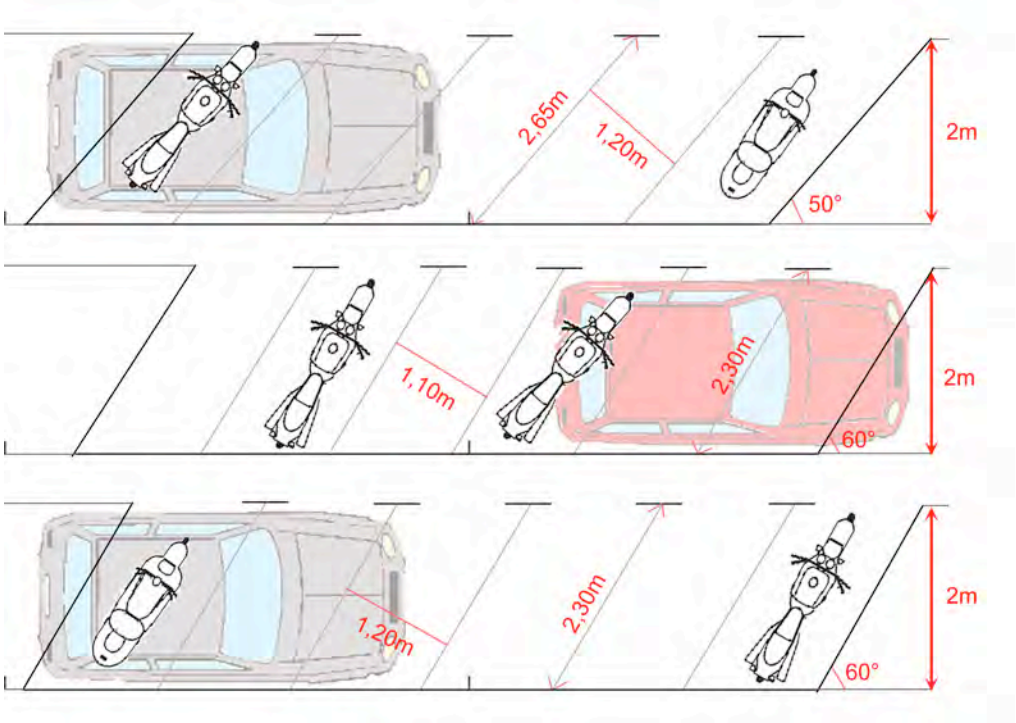
The geometry of each type of parking bay depends on the dimensions and number of "parking modules" selected.
The redundant spaces found at either end of angled parking bays can be used for :

- distancing cars from PTWs ;
- installing road signs ;
- creating footpath built-outs to aid pedestrian crossing.

[3] The rear overhang is the distance between the rear wheel axle and the rear-most point of the vehicle.

Examples of angled parking geometries in a module comprising two car parking spaces

For a car parking space 2 m wide and 5 m long

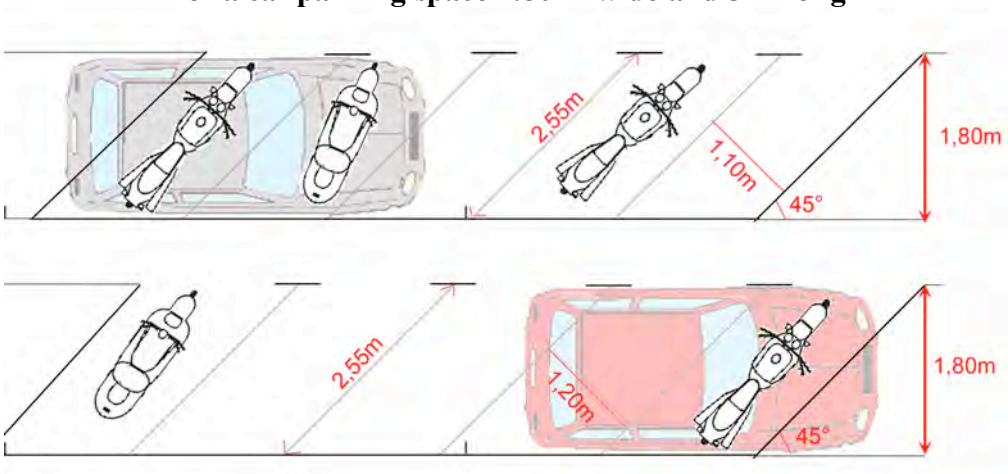


The right-hand section shows the number of spaces that can theoretically be implemented Within a 2 m wide half-module for each of the given geometric arrangements.

Notes on the above examples

Angle	Module width	Module length *(number of 10 m modules)*	Width of parking space	Number of parking spaces	Advantages	Disadvantages
60°	2 m	1 module	1.20 m	6 spaces	6 spaces Comfortable width	"Tight" depth of 2.30 m
60°	2 m	1 module	1.10 m	6 spaces	6 spaces	"Tight" depth of 2.30 m Reduced room for parking Parking spaces are narrower
50°	2 m	1 module	1.20 m	5 spaces	More comfortable depth of 2.65 m Comfortable width	1 parking space fewer than with a 60° angle
60°	2 m	½ module	1.10 m	3 spaces	3 spaces	Shorter spaces of 2.30 m ; also narrower
50°	2 m	½ module	1.20 m	2 spaces	Comfortable width More comfortable depth of 2.65 m	2 spaces
60°	2 m	1½ modules	1.20 m	9 spaces	Comfortable width 3 spaces more than the 10 m module	9 spaces "Tight" depth of 2.30 m Reduced room for parking
60°	2 m	1½ modules	1.10 m	10 spaces	4 spaces more than the 10 m module	"Tight" depth of 2.30 m and also narrower
50°	2 m	1½ modules	1.20 m	8 spaces	3 spaces more than the 10 m module Comfortable width More comfortable depth of 2.65 m	Fewer parking spaces than with a 60° angle

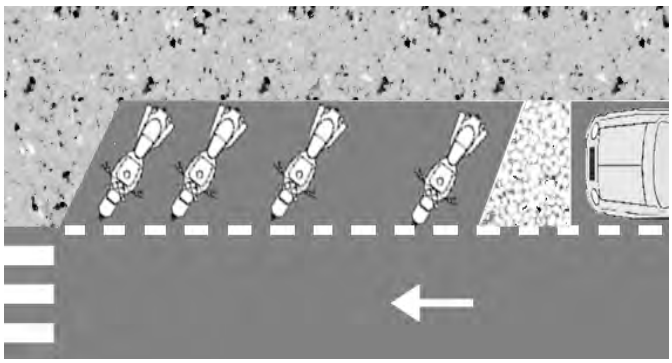
For a car parking space 1.80 m wide and 5 m long



The right-hand section shows the number of spaces that can theoretically be implemented within a 1.8 m wide half-module for each of the given geometric arrangements.

Notes on the above examples

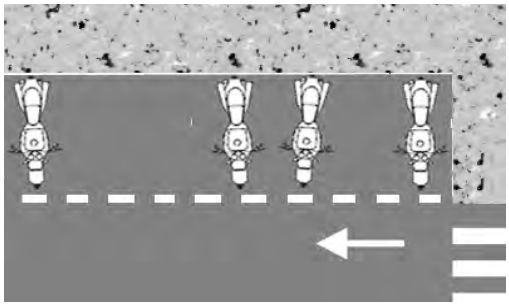
Angle	Module width	Module length *(number of 10 m modules)*	Width of parking space	Number of parking spaces	Advantages	Disadvantages
45°	1.80 m	1 module	1.20 m	5 spaces	Comfortable width	
60°	1.80 m	1 module	1.10 m	5 spaces		Narrower parking space Reduced room for parking
45°	1.80 m	½ module	1.20 m	2 spaces	Comfortable width	1 parking space slightly truncated
45°	1.80 m	½ module	1.10 m	2 spaces		The parking space is narrower
45°	1.80 m	1½ modules	1.20 m	8 spaces	Comfortable width 3 spaces more than the 10 m module	
45°	1.80 m	1½ modules	1.10 m	8 spaces	3 spaces more than the 10 m module	The parking space is narrower Reduced room for parking



The general principle of angled parking adjacent to parallel car parking.

➢ Perpendicular parking

This type of parking can be more easily implemented in off-street car parks or in areas with no adjacent car parking, as the required depth of the bay makes the use of adapted car parking modules more difficult.

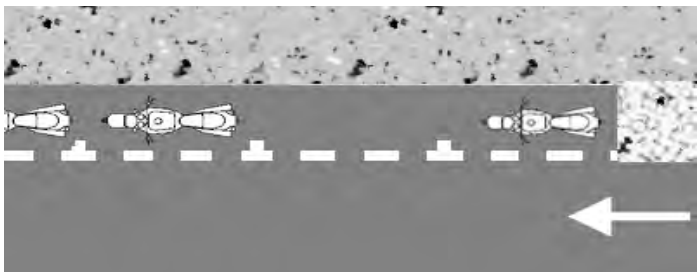


Perpendicular parking in an indoor car park.
Photos : CETE Normandie–Centre

On-street parking that does not usea car parking module.

➢ Parallel parking

We have already seen that if the road's crossfall is too pronounced, PTW vehicles parked on the roadside risk being unstable. In such cases, if the road concerned is a two-way street, either the surface should be evened out or this type of parking should not be installed. If the road concerned is a one-way street, the parking bay should preferably be located on the left-hand side of the carriageway.



Photos : CETE Normandie–Centre

An example of a parallel parking bay with no demarcation lines to separate vehicles, and which is instead being used as an angled parking bay :

- *When demand is too high, users prefer to park at an angle to the road in order to maximise the number of available parking spaces.*
- *Users are not used to this type of parking bay.*
- *The parking bay is perhaps too wide to allow it to be identified as intended for parallel parking.*

➢ **Converting part of the footpath into a PTW parking bay**

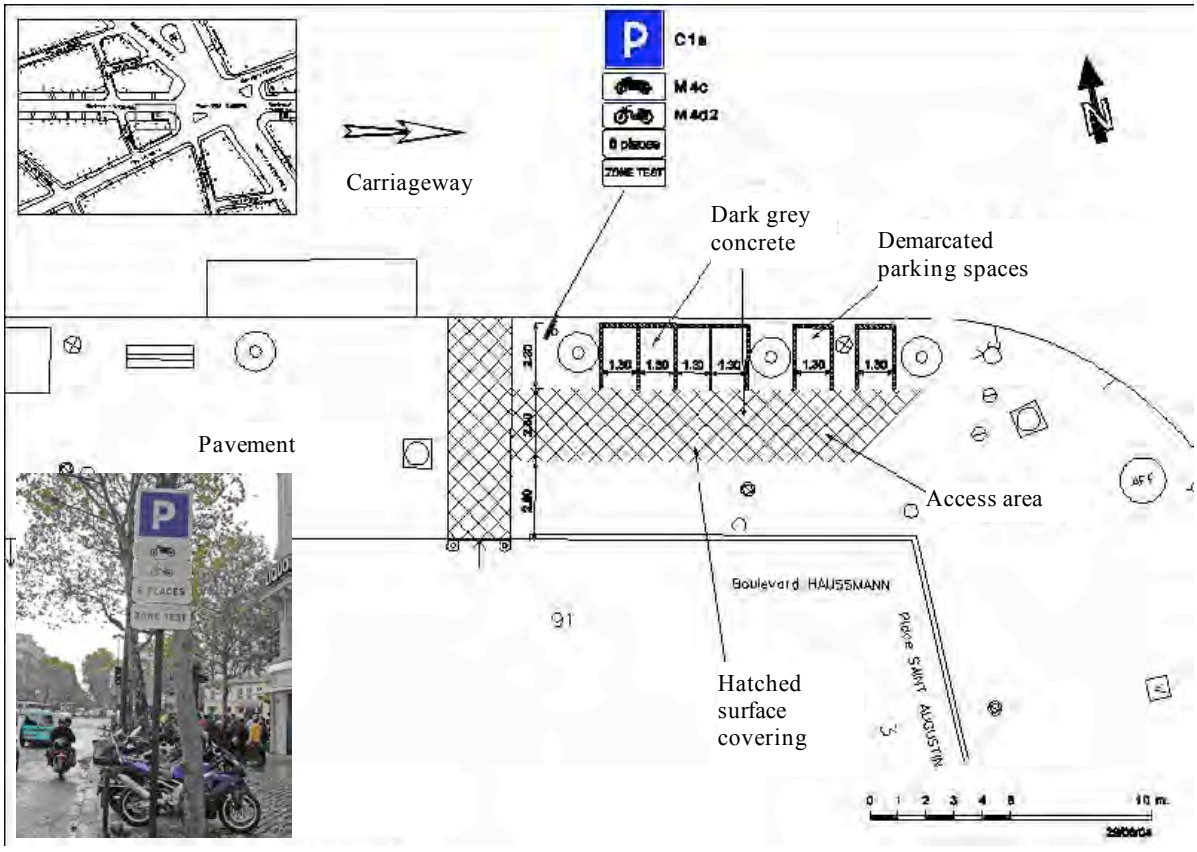
Footpaths are reserved for the use of pedestrians. If the area available to pedestrians is wide enough to be shared with other users, and if on-street PTW parking is impossible (or undesirable), then the conversion of part of the footpath into a PTW parking bay can be considered.

General requirements :

- projects should take into consideration pedestrian mobility and the location of pedestrian crossings ; minimum accessibility requirements for persons of reduced mobility should be respected ; parking bays should not block direct pedestrian routes ;
- parking bays should be situated on the part of the footpath nearest to the carriageway ;
- emergency vehicle access must be maintained ;
- as driving on footpaths is prohibited, vehicle access to the parking bay must be ensured via an identified route, such as, for example, a vehicle access entrance ;
- it is advisable to contact community groups and associations for pedestrians, the visually impaired, and persons of reduced mobility from the very outset of preparations for projects of this kind.

Projects must be studied on a case-by-case basis according to the specific characteristics of each site.

Here is an example from Paris :



An experiment was conducted in 2004. Community groups and associations for persons of reduced mobility and the visually impaired were consulted. A pedestrian opinion poll was also carried out.
Vehicles access the parking bay via a vehicle access entrance located less than 5 m from the parking spaces.

e. Offering anchor points according to bay usage

Once an adequate geometry has been selected, it is also advisable to consider installing anchor points.
Motorcycle riders are often concerned for the security of their vehicle, especially when it is no longer within their sight. Specially adapted anchor points can reduce the risk of theft, while also assisting with the arrangement of parked vehicles and preventing the "domino" effect of falling vehicles.
For urban planners, however, anchor points have certain disadvantages. First, they increase the budget required to create the parking bay ; second, anchor points are not always aesthetically pleasing ; and finally, anchor points can also obstruct more vulnerable users. A parking bay without anchor points can also be implemented more quickly.

There are several possible reasons why users may choose not to use anchor points :

- the anchor points provided do not allow all types of PTW to be attached with a U-lock ;
- the anchor points provided do not support anti-theft devices, which are left trailing on the ground and whose effectiveness is reduced as a result ;
- the geometry of the parking space and/or the lack of room to manoeuvre PTWs with the engine off, makes positioning the vehicle against an anchor point in areas of public passage difficult ;
- the vehicle owner's equipment of choice may not allow the vehicle to be attached to an external anchor. For example, "disc locks" are increasingly popular among PTW users as they take up less room ;
- the vehicle owner may not be leaving the vehicle for long and/or can guard or see the vehicle ;
- certain users are simply not afraid of theft.

In highly frequented areas, depending on the level of demand, it is better to create parking provision with no attachment points than to not create any parking provision at all. A test phase may be necessary to help select the site (level of frequentation) and the geometry of the parking spaces (how the vehicles are positioned).
Parking bays in less frequented and/or residential areas (long-stay parking) require the installation and use of anchor points, as this reinforces the feeling of security.

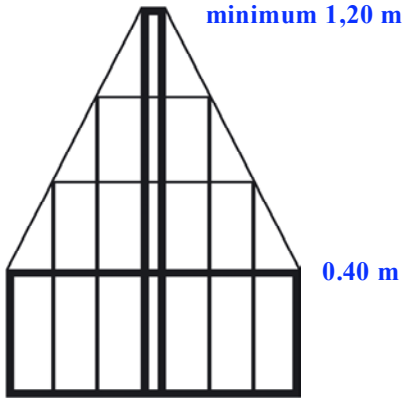
➢ Examples of different anchor points

No matter what their form and dimensions may be, anchor points must allow all types of PTW to be easily attached to them. The vehicle user must also be able to secure their PTW with any type of anti-theft device (U-locks or chains).

If the attachment points are not located on the carriageway, or are located near areas of pedestrian passage, they must be detectable by the visually impaired, and must not obstruct persons of reduced mobility.

Posts and units detectable by the visually impaired

Detection field for posts and units in relation to their width and height :



(recommendations of AFNOR [French Standards] manual P 98-350)

- a colour that contrasts with their surrounding environment,
- a barrier with a lower element no more than 0.40 m in height.

From : Une voirie accessible – Certu

To allow their detection, thin anchor points should be tall (minimum 1.20m). If they are low, they should be 80cm wide and at least 40cm tall.

Examples of the different types of anchor points available.

Type of anchor point	Ground anchor
	*The type of ground anchor pictured on the left cannot be used by cyclists. Any ambiguity of intended use is therefore avoided.* *Not all types of PTW can be attached to such anchors.* *The use of a chain is obligatory. As the attachment point is on the ground, it can be broken more easily.* *Does not form an obstruction.* *Easily integrated into the surrounding landscape.* *Photo : Artech et Graphisme*

Type of anchor point	Single-post structures
	**Single post with chain** *All types of PTW can be attached.* *Does not take up a lot of space.* *Photo : FFMC*
	**Single post with loop and cable** *All types of PTW can be attached.* *The loop can also be used to support bicycles.* *Photo : Grenoble City Council*

Type of anchor point	Single-post structures
	**Single loop** *These take up little space.* *They do not offer any means of supporting attached anti-theft devices.* *Photo : Paris City Council*
	**U-shaped "Sheffield" stands** *Simple, cost-effective, sturdy.* *Cyclists can also attach their bicycles.* *This stand has a ring for vehicle attachment.* *Requires regular repainting.* *Not as easy to integrate into the surrounding landscape as a single-post or single-loop structure.* *Photo : Bordeaux Urban Community*

Type of anchor point	Bars
	**Single bar** *Simple, cost-effective, sturdy.* *Optimising the number of PTWs able to use the stand relies on the behaviour of the users themselves (vehicles all positioned in the same direction, sensible spacing in between vehicles).* *Photo : CETE Normandie–Centre*
	**Single bar with cables** *All types of PTW can be attached.* *Vehicles can park on both sides of the bar.* *If a vehicle is parked at an angle or parallel to the bar, access for other users is hindered.* *Photo : Cyclosgard*

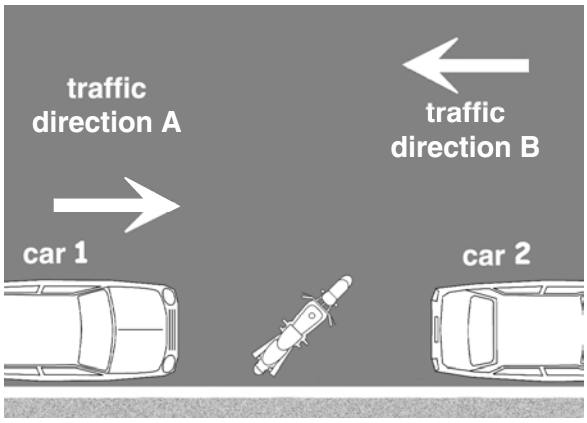
Moped and Motorcycle Parking in Urban Areas

Appendix

Mutual visibility test for a car driver and motorcycle rider exiting an angled parking space

We parked a motorcycle at an angle between cars parked parallel to the kerb.

We varied the distance separating the cars from the motorcycle, and then took photos from the car and motorcycle driver's positions.



Car driver's viewpoint (direction A) :

At around 35 m from the motorcycle.
The motorcycle can barely be seen.

At around 20 m from the motorcycle.

Car driver's viewpoint (direction B) :

At around 20 m from the motorcycle :

The car in the foreground is located around 8 m from the motorcycle.
The motorcycle would be far less visible if the white car was any closer.

Motorcyclist's viewpoint :

The white car (direction A) is **in both cases** around 40 m away :

The car is parked approximately 5 m away. The motorcyclist can see the car arrive at a distance of 40 m.

The car is parked approximately 2 m away. The motorcyclist cannot see the car when "blocked in" by parked cars on both sides.

The car is parked around 5 m away. The car coming from the right can easily be seen.

The car is parked a little less than 2 m away. The approaching car is less visible.

Parked vehicles can considerably block visibility.

Bibliography

Main legal documents

- *Code de la Route* (French highway code)
- *Code des Collectivités Territoriales* (French law governing local authorities and their powers)
- Order of 24 November 1967 governing the use of road and motorway signs (www.securiteroutiere.equipement.gouv.fr)
- *Instruction Interministérielle sur la Signalisation Routière* (France's official directive on road signs and markings)

[1] : *Instruction Interministérielle sur la Signalisation Routière* – Part 7 : "*Marques sur chaussée*" ("Carriageway markings")

[3] : *Instruction Interministérielle sur la Signalisation Routière* – Part 1 : "*Généralités*" ("General principles").

Guides and technical information sheets

- *Prise en compte des motocyclistes dans l'aménagement et la gestion des infrastructures* - Setra–Certu - 2000
- *Accidents contre obstacles en milieu urbain – Comment limiter leur nombre et leur gravité ?* – Certu - 2005
- *Les enquêtes de stationnement* – Certu - 2000

[2]
- *Guide sur le marquage de la chaussée en agglomération* – Certu - 2004
- *Le stationnement des vélos sur les espaces privés* – Certu - Information sheet

[4] : A document entitled *Connaître le stationnement des 2RM : méthodologie pour dresser un état des lieux* ("PTW parking : a methodology for evaluating the current situation") is currently being prepared by Certu.

Detailed table of contents

The translation work was coordinated by Benoît Hiron, Head of the urban road safety unit at CERTU. The actual translation was carried out by Birdwell Institute Lyon.

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Back cover

For many years now, Certu has been working in the field of urban mobility and transport organisation, in particular through urban mobilityplans (PDUs).
As the author of the 1996 guide to developing PDUs, Certu has subsequently evaluated the PDUs that were defined in application of the French law on air quality and the rational use of energy, as well as the extent to which road safety is acknowledged in urban mobilityplans. These evaluations revealed the strengths and weaknesses of such measures. One of these weaknesses, among others, was that powered two-wheelers appear to be particularly poorly catered for, especially in terms of parking.

Of course, journeys by powered two-wheelers only represent a small number of the total journeys made in urban areas (1% to 2% at the most, except for areas where congestion is a particular problem, such as Paris or the Côte d'Azur, where surveys show that 4% of total journeys made on normal weekdays are made by powered two-wheelers). Nonetheless, this mode of transport is in fact used, with varying degrees of regularity, by around 10% of the population over the legal age of use. We know that the use of powered two-wheelers is growing, especially in place of cars.
The unorganised and thus haphazard improvised parking of powered two-wheelers is a problem encountered all too frequently. It is perceived as a key threat to safety by vulnerable road users such as pedestrians and persons of reduced mobility (who are obliged to walk on the carriageway). This view was also echoed by the user groups consulted as part of the national workshops for the creation of a "*Code de la Rue"* ("Street code") to complement the existing Highway Code. As a result, we considered it important to address the issue of powered two-wheeler parking from the perspective of regulations and urban planning.

We hope that this document will provide all the information necessary for implementing powered two-wheeler parking in public spaces, indoor car parks and areas of collective housing. We are currently working to produce a document entitled *Connaître le stationnement des 2RM : méthodologie pour dresser un état des lieux* ("PTW parking : a methodology for evaluating the current situation"), which should further contribute to the growing debate over the need for a concrete policy governing powered two-wheeler parking in towns and cities.