

INFRASTRUCTURE / PUBLIC TRANSPORT

## CYCLING FACILITIES AT INTERCHANGES

### Overview

Bicycle parking at train stations and metro, tram, light rail and bus stops encourage cyclists to make combined longer trips. Each type of stop needs a suitable mix of parking and storage to cater for various cyclists' needs. This must be nearby and convenient for smooth interchange. Major train stations have huge cycling potential, and can be equipped as bicycle stations, including a range of additional bicycle services.

### Background and Objectives

#### Function

Bicycle parking at public transport stops and stations promotes the combined use of bicycles and public transport within one trip. This intermodal trip chain offers a strong alternative to car use on longer distances and contributes to modal shift and a sustainable transport system. Generally, it has the potential to increase both cycling and public transport use.

#### Scope

**All public transport stops must be considered as potential interchange points of the public transport networks and the cycle network.** This goes for all levels of train stations, metro, tram, light rail and bus services, except for the most local bus routes.

Integrating public transport networks and the cycle network brings **benefits both for cycling and for public transport.** This is because public transport and cycling are generally complementary modes. They can easily be combined as links in a door-to-door trip chain.

- **For the cyclist,** cycling to or from a public transport stop is an efficient way of making longer trips (over 7.5 km). This depends on the real and perceived quality of public transport itself but just as much on cycle-friendly interchange conditions. This means high-quality, safe, easily accessible and affordable parking and storage options. This increases mobility for non-car owners at little cost, and reduces the need for car ownership.
- **For the public transport operator and the transport authority,** cycling is a valuable feeder mode, whose potential must be developed. It increases the catchment area of stops more than tenfold compared to walking. Its parking needs are much less space-consuming than cars. It may reduce the need for local bus feeder services. And the combined bicycle-train-bicycle trip is a competitive alternative to a car-only trip, thus increasing ridership.

**The potential is high.** In the Netherlands about 40% of train passengers arrive by bicycle, and 10% of train passengers continue their trip by bicycle. Also, 14% of bus passengers use the bicycle as access mode.

### Implementation

#### Definition

Bicycle parking provision at public transport stops refers to parking (stands, racks) and storage (lockers, supervised facilities) at interchange points. Provision depends on the level of public transport and the number of interchanging cyclists. The term bicycle stations refers to provision at major train stations, including parking, storage and a more or less wide range of additional cycling services.



### The right parking mix for each public transport location

The transfer from bicycle to public transport by definition involves average or long-term parking and storage. Security and covering are important issues. **The level of the interchange determines the needs and the potential.** The more important the exchange, ranging from a bus stop to a major railroad hub, the longer the trips and the parking period tend to be, and the higher the demand for bicycle parking will be. At the same time, the required levels of security, covering and service increase.

A mix of cycle parking provisions is always needed in terms of service level, price, and access, to cater for the widest **range of user demands.**

- Most users will prefer **free parking.**
- **Occasional users** must have easy access to parking and storage, without the need for subscriptions or access cards.
- Some **regular users** will demand a secure and reserved space, and be willing to pay for it.
- There is a demand for safe parking and storage **24h a day.** This is because the bicycle can be used both for access trips and egress trips. Some passengers arrive by bicycle, park or store it and leave by train. Others arrive by train, and pick up a bicycle from night storage to use in the daytime. Daytime parking will be dominant at outbound commuter stations in residential areas, nighttime parking more common on inbound commuter stations in employment areas.
- A number of users may not be train users, but **visitors** to the station area, which is often a busy commercial, employment and service area, near or in the city center. Access should not be restricted to train users, although these may receive incentives.

The number of cyclists serves as a useful indicator to define the appropriate **mix of bicycle parking provision.**

- Always include **a basic provision of stands and racks,** preferably covered: you can attach your bicycle, protected from the weather for a longer period.
- **A limited number of rented lockers** can be provided as a premium service.
- As numbers increase, individual lockers should be replaced by **collective storage on a paid-for subscription basis** and with smart-card access; this will at most attract 20% of cyclists.
- At the very largest stations a **free indoor parking storage** with some supervision should be offered. This is safer than unsupervised stands, and less expensive than the most secure individual lockers.

Small (< 300 bicycles)	Average (300-1000 bicycles)	Large (> 1000 bicycles)
Free bicycle parking, allowing bicycles to be secured, preferably covered	Free bicycle parking, allowing bicycles to be secured, preferably covered	Free bicycle parking, allowing bicycles to be secured, preferably covered
		Free indoor storage with some supervision
Paid-for locker storage	Automatically secured storage, paid-for and with access control	Automatically secured storage, paid-for and with access control

### *Bicycle parking at train stations*

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Cycle parking should be **standard equipment for all urban train stations**. Most train stations in urban areas are minor or major intermodal hubs. Passengers interchange from train to metro, tram, bus, taxi or car. For short access or egress distances, interchange with bicycles is a unique and flexible part of the system, much less space-consuming than car parking.

Cycle parking at stations requires **structural cooperation between local authorities and transport operators**. Generally, the transport operator is responsible for parking infrastructure, most often on its own grounds. On the other hand, local authorities are an obvious stakeholder and active partner.

- Promoting bicycle-train interchange contributes to sustainable mobility plans, to reduce car use and car-pressure in the city.
- Well-organized bicycle parking prevents chaotic spillover of bicycles in surrounding streets and squares, visually degrading public space.
- Station bicycle parking may double as city-centre bicycle parking space.
- Major stations are obvious locations for bicycle services and promotion.
- Major bicycle parking schemes may offer opportunities for architectural landmarks and city marketing.
- Local authorities can initiate partnerships and exploit synergies, for instance with social employment projects or the urban parking agency or operator.
- Local authorities can contribute directly towards exploitation costs, in order to lower fees or make storing free, in order to increase personnel or supervision time.

Station bicycle parking facilities should respond to the highest quality criteria<sup>1</sup>. In addition, because of their interchange function, they must be **designed for smooth bicycle-train interchange**, with minimum time loss.

- Locate parking facilities **on the main cycling access route**, so that cyclists park on their way to the station, without detours.
- Make sure cyclist to **ride right up to any parking or storage facility**. They should not be obliged to walk more than 50 m wheeling their bicycle.
- **Reduce the walking distance** from the most distant parking space to the station entrance. Dutch guidance suggests less than 200 m in supervised storage, and less than 50 m in unsupervised parking. For this reason multi-tier systems or multi-level bicycle facilities may be indispensable in large stations of over 1,000 bicycles,.
- **Consider combined ticketing** for train, coach and bicycle parking. This will offer a price reduction and also speed up parking and retrieval of the bicycle.
- Provide **broad opening times**. Opening times of supervised storage should match opening times of the station, roughly 20 h per day (3 shifts). Automated storage provides 24 h access, also for non-train users. In medium-sized stations with fewer cyclists, minimum opening times should be from morning to evening peak hours (7h to 19h), possibly with a midday break.
- Larger stations with multiple tracks require **smooth grade-separated crossings**. It is recommended to provide bicycle parking on both sides. Crossing tunnels should allow cyclists to keep riding.<sup>2</sup>
- In the largest storage facilities, consider providing **visual guidance and signage**, such as numbering aisles and colour-coding, so that cyclists can more easily locate their bicycle on retrieval.

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<sup>1</sup> See fact sheets on BICYCLE PARKING IN CITY CENTRES, BICYCLE PARKING AND STORAGE

<sup>2</sup> For design recommendations, see GRADE-SEPARATED CROSSINGS



Individual locker  
(image source: city of Brugge)



Free bicycle parking at a station  
(image source: P. Kroeze)



Supervised bicycle storage entrance  
(image source: Fietsberaad)

### Bicycle stations

At major multimodal interchanges the potential is huge in absolute numbers. This offers the opportunity to create full-fledged **bicycle stations**. The notion covers various practices, but it generally includes **supervised storage at railway station with additional cycling services**.<sup>3</sup>

- In the **Netherlands**, large supervised storage and basic services are common and standard at large stations. There are 93 cycle stations with on average 1,000 bicycles bicycle spaces, but in some cases up to 10,000.
- In **North Rhein Westphalia**, the term bicycle station (Radstation) was coined in 1995. It was used as a brand name for a program to equip 100 stations. Their size ranges from 100 to 3,300 (Münstef) bicycle parking spaces.
- Nowadays, 'bicycle station' has become a popular **branding concept**, with equivalents in several languages (vélostation, ciclostazione). As such, it can be useful for promotion and communication on ambitious bicycle parking projects, especially in starter and climber cities.
- Cycle stations can usefully be integrated in wider **renovation schemes of stations and their surroundings**, such as Euroville Basel.

Here are recommendations on how to define parking and storage **capacity**.

- Current demand can easily be determined by **counting parked bicycles** in the station area. To this, add about 20% as spare capacity, to assure an easy flow and reduce searching time.
- Another starting point is to take a **share of the number of daily passengers**. This may be an assessment of current or potential bicycle users, for access as well as egress trips. Considering the shares in forerunner cities, a capacity between 10% to 30 % percent is recommended by Danish guidance. Starter and climber cities may need to be more prudent, in view of an overall lower cycling share. However, policy may set an objective of a share to reach by improved facilities, additional services and promotion. A passenger survey may indicate latent demand.
- High-quality cycle stations always increase demand, certainly if it is combined with excellent access through a cycle network. It is recommended to **set aside space for expansion**, and adapt on the basis of **frequent monitoring**.

A wide range of potential **cycling services** is offered at various bicycle stations.

- Vehicle servicing, including bicycle cleaning, maintenance and repair, bicycle pumps, charging of e-bikes and pedelecs, anti-theft registration;
- Rent or sale of accessories: baby seats, extensions, cycle clothing, repair kit;
- Dedicated toilets and showers;
- Rent or sale of new or second-hand bicycles; rent can be short-term (public bicycles) or long-term (up to a year).

<sup>3</sup> Based on Ursula Lehner-Lienz, 2009: *Bicycle stations in Europe* (Velocity Conference)

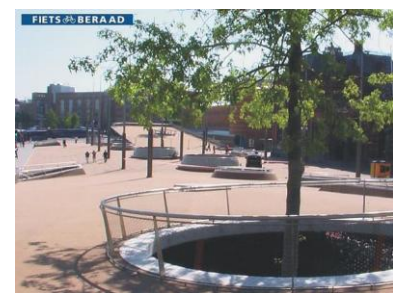
- Cycling information and promotion: visitor and tourist information, cycling maps, exhibitions, test rides for inexperienced users; the many passers-by make a railway station an excellent location for awareness raising and promotion of non-cyclists.

Various options for **operation and management** are used.

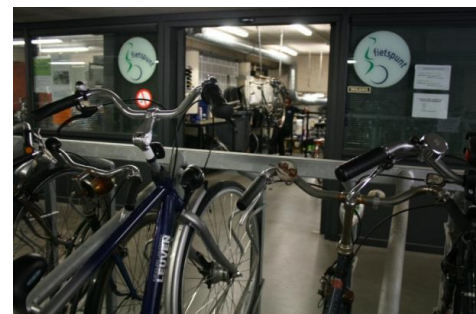
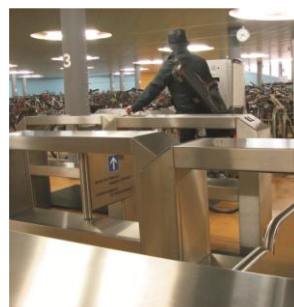
- Management includes a wide **range of tasks**: access control and supervision, cleaning and maintenance, providing extra services, marketing (such as developing employee contracts with companies) and monitoring occupancy rates.
- Most schemes are not profitable and involve some measure of **public financing**. However, rental and sales activities and other paid-for services can considerably raise overall profitability for a commercial operator. In some Dutch cities, bicycle parking is funded by a set-aside share of car parking revenues.
- Various **management options** are in use. Some cycle stations have been granted as all-in concessions to private companies, such as facility management companies or parking management companies. Others are run by the public authorities or a public agency, by non-profit pro-cycling organizations or directly by the train operator. This often takes the form of partnerships.
- Bicycle stations are often coupled with **job-creation schemes**, as part of social inclusion policies. Personnel can be recruited among the long-term unemployed. This allows for cross-financing (for instance the Swiss Vélostations and the Belgian Fietspunten).

Intermodal trips mostly go beyond a single urban area. To offer cyclists the guarantee of standard provision, some form of **region-wide or national coordination** is recommended.

- Coordination may take **diverse forms**. It may be entrusted to a subsidiary of the railway company with policy set by national authorities (such as NS Fiets in the Netherlands) or to a collaboration between various partners (such as the Bureau Suisse de la coordination des vélostations in Switzerland).
- Coordination makes it possible to develop **strategic priority planning** on the basis of an overall needs analysis, with potential **additional funding** resources.
- Coordination offers the possibility of **further bicycle-public transport integration**: fees, ticketing, joint subscriptions and shared access technology. In the Netherlands, train season-ticket holders can use their smart card to rent a public bicycle for their egress trips at their destination (OV-fiets).



Interchange bicycle station at Groningen, underground, well-lit with daylight smooth access ramp (source: Fietsberaad – NL)



Basel bicycle station (image source: P. Celis, Bicycle Parking Manual, DK)

'Bicycle point' at railway station Leuven, Belgium – T. Asperges



Multi-level bicycle parking at Ostend station  
(source: T. Asperges)



Amsterdam's innovative bicycle flat  
near the central station,  
built over water (NL)

### Bus, tram and metro stops

Many train stations are busy areas and urban destinations in their own right. Bus, tram and metro stops, however, are basically simple **transfer points**. Their catchment area is smaller, their passenger numbers lower, their stops closer to each other and distances covered shorter.

On the **shortest distances**, the bicycle will be **more of a substitute than a complement**.

- This is mainly true for **local urban bus lines**. They offer a fine-meshed network, with frequent stops close to destinations, at a fairly low service speed. Combined bicycle-bus trips are unlikely. If the density of stops is high, they will be within walking distance and a bicycle will not be needed. Moreover, the bicycle may simply be faster and more flexible.
- Similarly, in **smaller cities** total trip lengths will generally be within cycling distance, up to 7.5 km. For trips in the city, combined trips with local public transport will be rare.

Cycle parking is, however, recommended at stops on **regional bus and coach routes**, for trips into or between urban areas.

- Bicycle parking can significantly increase public transport use. Most passengers accept a 10-minute trip to a bus stop. For a pedestrian this corresponds to about 800 m (at 5 km/h), but for a cyclist to about 3,3 km (20 km/h). The 10-minute **catchment area** of the bus stop is up to fifteen times larger with bicycles: about 35 km<sup>2</sup> instead of barely 2 km<sup>2</sup>.
- Areas on **the edge of urban areas**, such as residential neighbourhoods, villages, business areas or leisure equipment, are often connected to the urban centre by a single bus route. Stops are often at the edge of the area, along a major road, and too far to walk for many. Providing adequate bicycle parking may be a strong incentive.
- Strong **regional express bus routes** have a similar function to local railways, covering long distances with few stops. There is a high potential for interchange. Since these stops can be at relatively isolated locations, theft of long-term parked bicycles may be an issue and paid-for lockers may be considered.

In central urban areas of large cities, bicycle parking is needed at all stops on **major, high-quality public transport routes**. Travel distance and time increases with city size. Because of this, major cities provide fast public transport options, covering longer distances with fewer stops, often on dedicated infrastructure: major bus routes or BRT services (Bus Rapid Transit), tramways, light rail and metro. For these cycling is a **natural complement** as a feeder mode.

Here are some recommendations towards equipping public urban transport stops.

- Basis equipment consists of bicycle **stands or racks**.
- Cycle **lockers** may be considered at the busiest ones or at the end of lines, where security may be an issue, because bicycles are parked for long periods, in locations with little social control.
- Set a **standard provision of 3 to 5 spaces** as a matter of policy.

- **Count existing demand**, and add 10 to 20 percent or minimum 5 spaces to accommodate realized latent demand.
- When designing new stops or bicycle provision at existing stops, always provide room for **expansion**, and monitor uptake.
- Locate bicycle parking **next to the stop** or not farther than 30 meters at the larger stops.



Covered bicycle parking tramway stops  
(Véloparc at Strasbourg)

## Considerations

### Strengths

Bicycle parking and storage at public transport stops

- improves mobility on longer trips for cyclists;
- encourages bicycle use, public transport use and modal shift;
- improves cyclists' visibility in public space and for all public transport users;
- can contribute to urban design, add value to urban renovation projects and contribute to city marketing;
- is not necessarily costly, as far as unsupervised systems are concerned.

### Weaknesses

Bicycle parking and storage at public transport stops

- may intrude visually and physically on public space if badly located and designed;
- needs coordination and monitoring with public transport providers;
- generally needs public funding where large scale facilities (such as bicycle stations) are concerned, towards construction as well as exploitation;

### Alternative options

Long-distance high-quality cycle tracks, sometimes called cycle highways, may compete with combined bicycle-public transport trips, for a limited share of cyclists.