

THE MICROMOBILITY PLANNING TOOLBOX

GEVEKO MARKINGS & COPENHAGENIZE DESIGN CO.



UNSIGNALISED BICYCLE PATH CROSSINGS	1
SIGNALISED BICYCLE PATH CROSSING	3
BICYCLE BOXES	4
MICROMOBILITY PARKING	5
WAYFINDING	6
CYCLE HIGHWAYS	7
TRAFFIC PLAYGROUNDS	8
ON-STREET CYCLE LOGISTICS HUBS	9
SCHOOL STREETS	10

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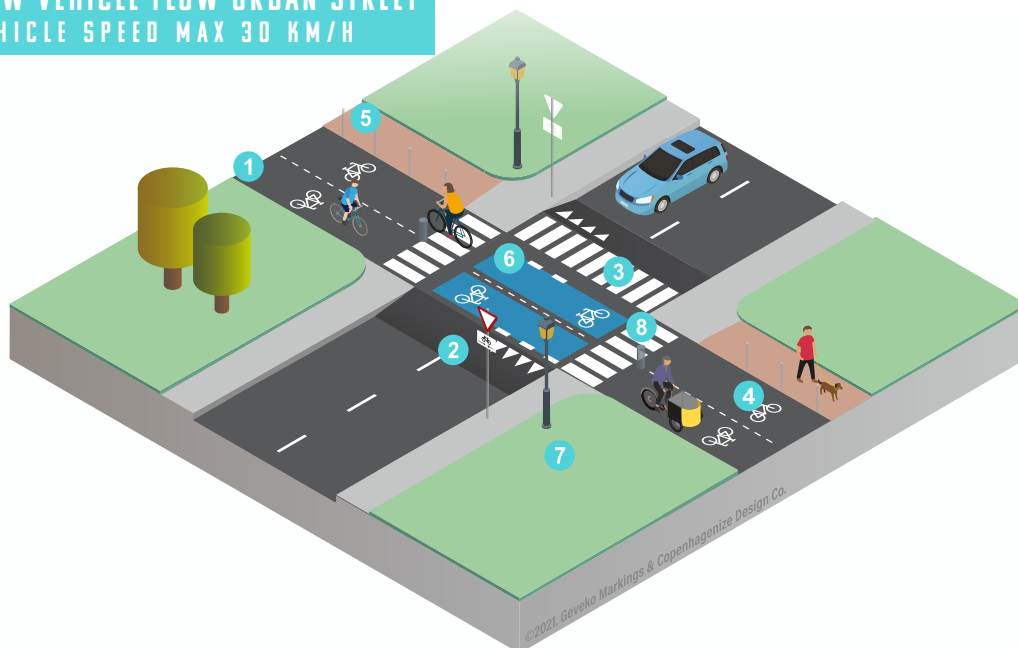
Off-street bicycle paths have become an important part of urban micro-mobility networks, facilitating year round riders of all ages and abilities. In order to improve bicycle traffic flow and comfort along main cycle routes, motorists should travel at a safe speed, yielding to bicycle path traffic.

Off-street bicycle path crossings must clearly communicate traffic priority in order to ensure safety and comfort. By employing a combination of physical and surface markings, bicycle path crossings can boost real and perceived safety, thereby encouraging new micromobility trips.

Bicycle path crossings can come in many shapes and sizes, depending on the scale of the intersecting road and traffic prioritisation. In the case of an off-street bicycle path crossing relatively small urban streets, an unsignalised crossings accompanied by a raised intersection and clear markings and signage can indicate priority.

It's important to keep in mind that the presence of a bicycle path crossing alone does not make for a safe street. To achieve this, a holistic approach to the surrounding area considering vehicle speed, traffic calming, and overall network connectivity needs to be considered. And finally, all-season maintenance is required to ensure safe trips for riders of all ages and abilities.

CROSSING A LOW VEHICLE FLOW URBAN STREET ADJACENT VEHICLE SPEED MAX 30 KM/H



- 1 Off-street bicycle paths separated with dashed lines.
- 2 Preformed yield markings paired with signage indicate the need to yield for crossing bicycle traffic.
- 3 "Zebra" pedestrian crossings indicate legal priority for pedestrians crossing conflicting traffic.
- 4 Along off-street bicycle paths and through intersections, preformed bicycle pictograms visually reinforce legal priority and visibility.
- 5 Off-street bicycle paths are clearly separated from parallel pedestrian paths.
- 6 Bicycle crossings applied with coloured slip resistant area markings, through intersections draw motorists' attention to bicycle traffic. Commonly applied in blue (pictured), red, or green.
- 7 Clear field of view makes approaching bicycle traffic visible
- 8 Bollards restrict car access to bicycle paths while passively slowing bicycle speed through the intersection

BENEFITS OF BICYCLE PATH CROSSINGS

- Raises awareness for all users to potential conflict areas
- Off-street bicycle paths are especially appreciated by school children, the elderly, and tourists.
- Guides bicyclists through the intersection in a straight and direct path, without having to dismount or encroach on pedestrian areas.
- Reduces all travellers' stress by delineating the use of each area and heightening visibility of all users.
- Makes movements of all vehicles more predictable.

ADDITIONAL CONSIDERATIONS

- A two-way off-street bicycle path should be at least 2.5 metres wide in order to provide a safe experience for riders of all ages and abilities.
- Marked bicycle crossings increase yielding behavior of motorists, while highlighting the pathway of vulnerable road users. One Danish study of signalised intersections found marked cycle crossings to result in a 36% drop in the number of cycling accidents and 57% in the number of seriously injured cyclists.*

*Jensen, S.U., Nielsen, M.A. (1996) Cykelfelter - Sikkerhedsmæssig effekt i signalregulerede kryds, Rapport 51, Vejdirektoratet, Denmark.

Off-street bicycle paths have become an important part of suburban and rural micromobility networks, facilitating year round riders of all ages and abilities. Detached from the conventional street network, riders along off-street paths typically yield when the path meets a fast moving car-centric road.

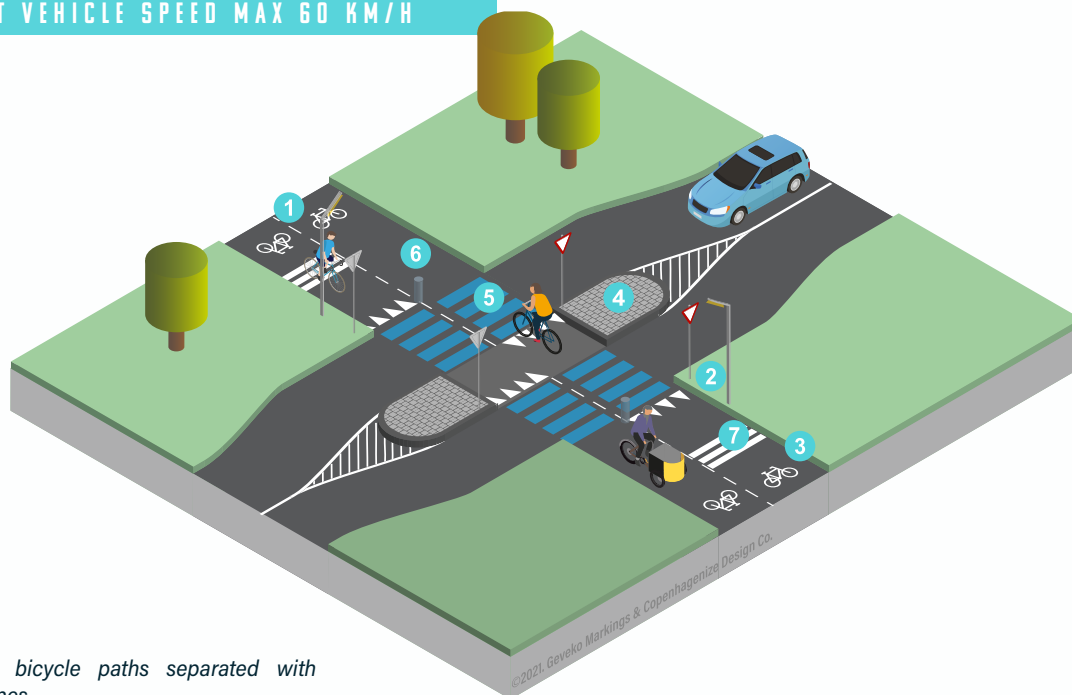
Off-street bicycle path crossings must clearly communicate traffic priority in order to ensure safety and comfort. By employing a combination of physical and surface markings, bicycle path crossings can boost real and perceived safety, thereby encouraging new micromobility trips.

Bicycle path crossings can come in many shapes and sizes, depending on the scale of the intersecting road and traffic prioritisation. In the case

of an off-street bicycle path crossing relatively fast moving suburban or rural road, an unsignalled crossings accompanied by refuge islands, and clear markings and signage can indicate priority. In this situation, the bicyclists yield to motorists, clarified in part by the hatched bicycle crossing. Bicyclists yield to motorists due to higher design speeds characteristic of suburban and rural roads.

It's important to keep in mind that the presence of a bicycle path crossing alone does not make for a safe street. To achieve this, a holistic approach to the surrounding area considering vehicle speed, traffic calming, and overall network connectivity needs to be considered. And finally, all-season maintenance is required to ensure safe trips for riders of all ages and abilities.

CROSSING A CAR ORIENTED EXURBAN STREET ADJACENT VEHICLE SPEED MAX 60 KM/H



- 1 Off-street bicycle paths separated with dashed lines.
- 2 Preformed yield markings paired with signage indicate the need to yield for crossing motorised traffic.
- 3 Along off-street bicycle paths, preformed bicycle pictograms visually reinforce legal priority and visibility.
- 4 Protected refuge islands at least 2.5m wide gives vulnerable road users a moment to pause while also narrowing car lanes, creating safer streets.
- 5 Hatched bicycle crossings applied with coloured slip resistant area markings draw attention to bicycle traffic while indicating motorists' right-of-way. Commonly applied in blue (pictured), red, or green.
- 6 Bollards restrict car access to bicycle paths while passively slowing bicycle speed through the intersection
- 7 Preformed rumble lines on off-street bicycle lanes approaching the intersection alert riders to oncoming intersections.

BENEFITS OF BICYCLE PATH CROSSINGS

- Raises awareness for all users to potential conflict areas
- Off-street bicycle paths are especially appreciated by school children, the elderly, and tourists.
- Guides bicyclists through the intersection in a straight and direct path, without having to dismount or encroach on pedestrian areas.
- Reduces all travellers' stress by delineating the use of each area and heightening visibility of all users.
- Makes movements of all vehicles more predictable.

ADDITIONAL CONSIDERATIONS

- A two-way off-street bicycle path should be at least 2.5 metres wide in order to provide a safe experience for riders of all ages and abilities.
- Marked bicycle crossings increase awareness of bicycle riders by highlighting the pathway of vulnerable road users. One Danish study of signalised intersections found marked cycle crossings to result in a 36% drop in the number of cycling accidents and 57% in the number of seriously injured cyclists.
- Protected refuge islands should be at least 2.5m wide

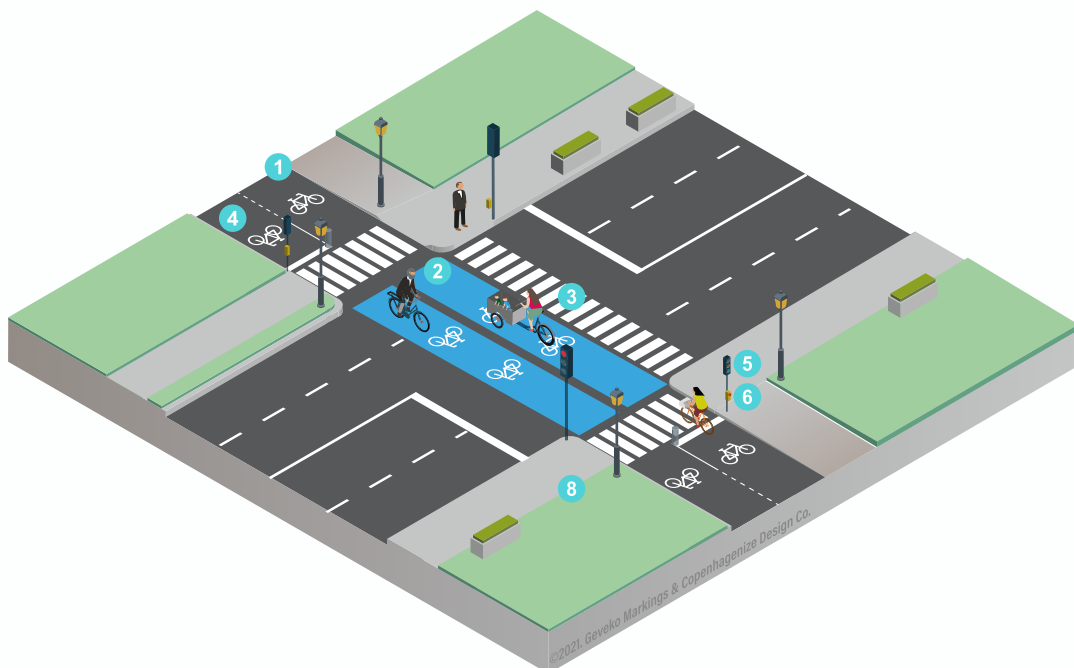
Off-street bicycle paths have become an important part of urban and suburban micromobility networks, facilitating year round riders of all ages and abilities. Detached from the conventional street network, riders along off-street paths typically yield when the path meets a car-centric road.

Off-street bicycle path crossings must clearly communicate traffic priority in order to ensure safety and comfort. By employing a combination of signal phasing and infrastructure design, bicycle path crossings can boost real and perceived safety, thereby encouraging new micromobility trips.

Bicycle path crossings can come in many shapes and sizes, depending on the scale of the intersecting road and traffic prioritisation. In the case of an off-street bicycle path crossing a faster moving and higher trafficked road will require a signalised crossing with corresponding markings and signage.

It's important to keep in mind that the presence of a bicycle path crossing alone does not make for a safe street. To achieve this, a holistic approach to the surrounding area considering vehicle speed, lane widths, and overall network connectivity needs to be considered. And finally, all-season maintenance is required to ensure safe trips for riders of all ages and abilities.

CROSSING A HIGHER TRAFFICKED URBAN STREET ADJACENT VEHICLE SPEED MAX 60 KM/H



- 1 Off-street bicycle paths separated with dashed lines.
- 2 Bicycle crossings applied with coloured slip resistant area markings, through intersections draw motorists' attention to bicycle traffic. Commonly applied in blue (pictured), red, or green.
- 3 "Zebra" pedestrian crossings indicate legal priority for pedestrians crossing conflicting traffic.
- 4 Along off-street bicycle paths and through intersections, preformed bicycle pictograms visually reinforce legal priority.
- 5 Dedicated bicycle signals facilitate safe and predictable behaviour. Cyclists should expect to wait no longer than 100 seconds at a red signal.
- 6 A combination of automatic buried induction loops and manual triggers can facilitate smooth bicycle flow through a signalised intersection.
- 7 Bollards restrict car access to bicycle paths while passively slowing bicycle speed through the intersection.
- 8 A clear, uninterrupted field of vision for all road users is important.

BENEFITS OF BICYCLE PATH CROSSINGS

- Signalised intersections clearly communicates right-of-way and minimises potential conflict amongst all bicycle riders
- Off-street bicycle paths are especially appreciated by school children, the elderly, and tourists.
- Raises awareness for all users to potential conflict areas
- Bicycles are acknowledged in the intersection's design

ADDITIONAL CONSIDERATIONS

- Marked bicycle crossings increase yielding behavior of motorists, while highlighting the pathway of vulnerable road users. One Danish study found marked cycle crossings to result in a 36% drop in the number of cycling accidents and 57% in the number of seriously injured cyclists.
- Cyclists should expect to wait no longer than 100 seconds at a red signal.

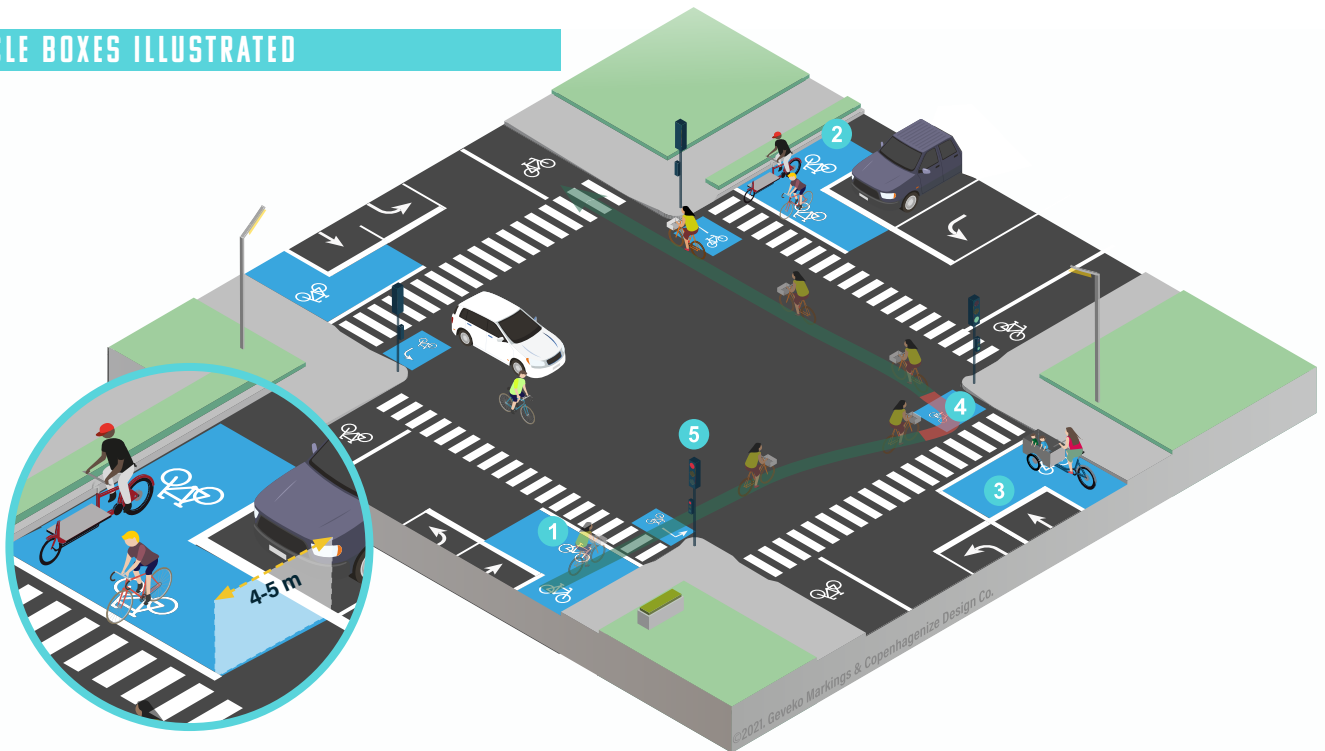
For many bicycle riders, busier intersections, and especially left turns, can be a very uncomfortable situation. Waiting in the blind spot of a lorry or needing to cross multiple lanes of moving traffic to complete a left turn is both dangerous and uncomfortable. Bicycle boxes can be an effective solution for avoiding such situations, making bicycle riders more visible and overall traffic safer.

There are two broad common uses for bicycle boxes at standard multi-lane, signalised, intersections: accommodating bicycle riders as

they await a green signal, and as they complete left turns. In each case, detailed design and signage are subject to local standards.

It's important to keep in mind that the presence of a bicycle box alone does not make for a safe intersection. To achieve this, a holistic approach to the surrounding area considering vehicle speed, lane widths, and overall network connectivity needs to be considered. And finally, all-season maintenance is required to ensure safe trips for riders of all ages and abilities.

BICYCLE BOXES ILLUSTRATED



- 1** Wide bike boxes facilitating relatively quick through traffic benefit both bicycle riders and motorists. With bicycle traffic having traveled through, right turning motorists can sooner find a break to complete their maneuver. This style of bicycle box can also accommodate riders making a two-stage left when necessary, though requiring them to cautiously pass over the pedestrian crossing while doing so.
- 2** Coloured bicycle lanes on the approach to the intersection draw motorists' attention to potential bicycle traffic, reducing the threat of right-turn collisions.
- 3** Set back stop-lines position bicycle riders 4-5 metres ahead of motorists while stopped at a red signal. Not only does this position bicycle riders outside of the motorists' blind spot, but it also helps make pedestrians more visible.
- 4** Two-stage left turn bicycle boxes provide a clearly marked space for riders to await a green signal. By positioning in front of the pedestrian crossing potential conflicts are reduced. A left turn bicycle pictogram informs road users of its purpose. Additional signage may help familiarise users with the two-stage maneuver.
- 5** Dedicated bicycle signals facilitate safe and predictable behaviour. Cyclists should ideally expect to wait 20-40 seconds, and no longer than 100 seconds at a red signal. Shorter and triggered signal phases increase the likelihood of obedience, while also reducing the perceived barriers of a two-stage left turn.

THE TWO-STAGE LEFT TURN

Two stage turn boxes offer bicycle riders a safe way to complete left turns. This maneuver requires bicycle riders to behave similarly to pedestrians when completing a left turn. The bicycle rider continues straight through the intersection with the green signal, stopping at the opposite corner, and completing the left turn with the green signal of the perpendicular street.

Though perceived as slower, the box-left approach enables safer, more predictable bicycle traffic. Accommodating the two-stage turn with a

marked left turn box can help ensure safer turning practices become more common. Two-stage left turn boxes can be positioned either in front or behind of pedestrian crossings. In some cases added signage and short signal phases can further facilitate this maneuver.

Once implemented, bicycle boxes increase the visibility of vulnerable road users, removes blind spots, prevents dangerous "right-hook" conflicts, and facilitates quick through traffic.

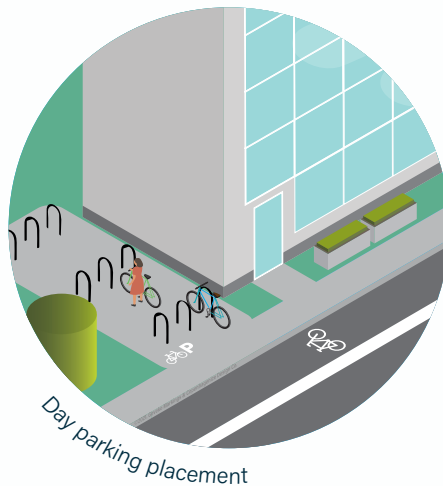
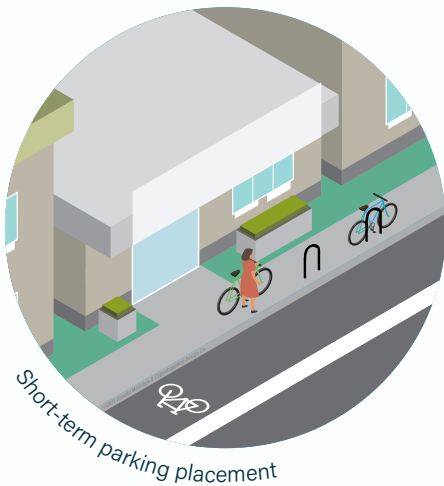
Successful micromobility parking design can empower people to spend less time figuring out where to park and more time getting on with their day. When it comes to micromobility parking, two key factors must be taken into account: rack design and placement. Beyond these factors, both shared micromobility vehicles and cargo bike parking deserve special attention.

RACK DESIGN

Parking racks should be simple and intuitive to use. The best bicycle rack designs are intuitive, provide upright support, are made of a single piece, are built to last. Two types of racks that have been successful globally are butterfly racks, ideal for indoor parking where building security minimises theft, and single hoop/U-racks. Racks should be spaced no tighter than 90 cm apart. Regular parking maintenance clearing the space of debris and abandoned bicycles help maintain a perception of security among existing and potential users.

RACK PLACEMENT

When parking a bicycle or scooter, proximity to the destination is a key factor. After all, if you wanted to park far away from the destination, you would have driven a car! The placement of micromobility parking varies depending on the duration of the user's stay. For instance, a bicycle rider popping into the corner store to buy an ice cream will look for parking very close to the door. On the other hand, someone parking their bike over the weekend would be more willing to park a little bit further from their end destination if there's clearly marked wayfinding and an added sense of security (ie covered or even indoor racks).



SHARED MICROMOBILITY PARKING

- 1 Left unchecked, floating micromobility services offering dockless short term rental of electric scooters and bicycles can clutter up valuable pedestrian spaces. Some cities have tackled this issue with 'geofencing' solutions. With geofencing, service providers utilize satellite positioning and other location based technologies to limit parking to virtually designated parking hubs. Geofenced parking hubs should be clearly marked and conveniently located close to existing mobility hubs and popular destinations. Marked with simple surface treatments, these geofenced hubs benefit from being relatively quick and flexible to implement.

CARGO BIKE PARKING

- 2 As relatively valuable vehicles, cargo bikes are at added risk of theft. Luckily, cargo bike rack design requirements do not differ too much from conventional bicycle parking. Providing parking that is simple, stable, secure, well spaced and well signed is key for cargo bikes. Given the diversity of cargo bike frame shapes, anchor points should be provided at all heights. Spacing between racks should be increased to 110 cm compared to conventional bicycle racks. In an effort to discourage people from parking conventional bicycles at these specially designated racks, communicative markings should be integrated.



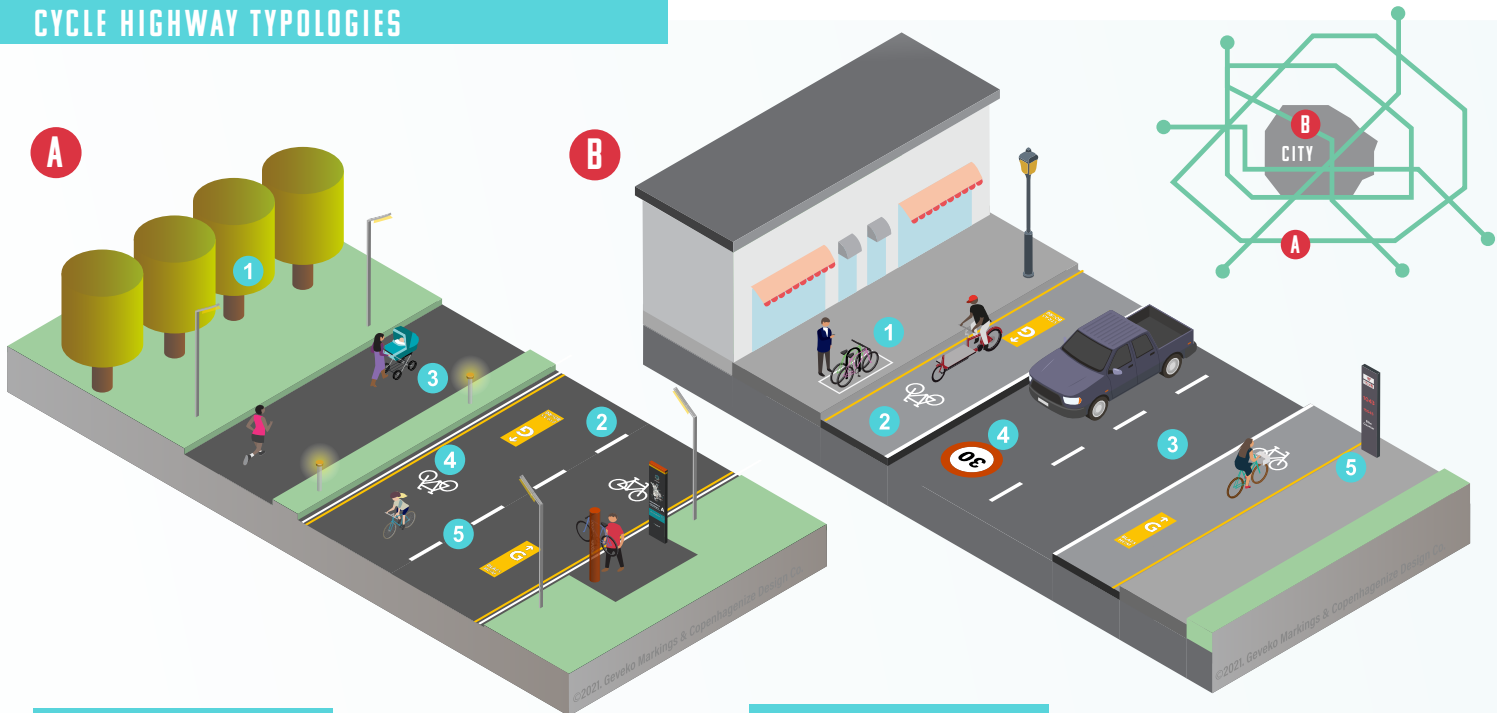
'Cycle highway' is a widely used term for a high-quality functional route that supports long-distance cycling. Sometimes known as cycle superhighways, bike freeways, cycle expressways, or simply fast routes, they connect towns, neighbouring cities and residential suburbs with city centres.

By focusing on the safety, speed and comfort of long-distance bike travel they offer a mode of transport that is competitive with transit or driving. The rising popularity and capacity of electrically assisted

bicycles have made longer cycle trips more accessible to a wider audience. As for infrastructure, surface markings are effective tools, as they are better designed to catch users' attention while also requiring less maintenance than vertical signage.

It's important to keep in mind that cycle highways are complete and far reaching concepts that require a commitment among stakeholders and robust and consistent maintenance plans throughout the network.

CYCLE HIGHWAY TYPOLOGIES



OFF-STREET FEATURES

- 1 Landscaping for sight lines, user interest, and wind blocking.
- 2 Maintained bonded surfaces rather than dirt or gravel surfacing.
- 3 Dynamic lighting that adjusts with daylight and traffic flows.
- 4 Preformed horizontal pictograms, consistent branding and signage to guide users.
- 5 Road markings, including centre-running dashed lines and solid striping along edges. Ideally reflective or high contrast.
- 6 Coloured slip resistant area markings, which draw motorists' attention, should be implemented in potential danger zones such as crossings and intersections (not pictured).

ON-STREET FEATURES

- 1 Cycle parking near facilities such as schools and shops.
- 2 Cycle lanes using grade separation, paving level differences or other physical measures. These are typically 2.5 to 3.5 meters in each direction.
- 3 White edge markings should be used on cycle lanes to clearly distinguish level changes and improve safety.
- 4 Traffic calming, speed and volume restrictions such as 30 km/h zones, lane removal, and limiting car parking.
- 5 Visible signage, branding and totems to enhance wayfinding.
- 6 Coloured slip resistant area markings, which draw motorists' attention, should be implemented in potential danger zones such as crossings and intersections (not pictured).

CASE STUDIES

In the Dutch province of **Gelderland** the RijnWaalpad a world class cycle highway connects the cities of Arnhem and Nijmegen via an 18 km long route with zero traffic lights, a bridge and a tunnel to avoid obstacles. With total construction costs under €18 million it now provides a direct alternative to car travel, with certain sections seeing over 35% more cyclists on weekdays and 130% more on weekends.¹

Denmark's Capital Region has delivered over 45 routes connecting 23 municipalities around Copenhagen. It has seen cyclists increase by 23%, average trip length increase to 11 km and average speed increase to 19 km/h. A recent follow up study showed an overall gain of €765 million to the Danish state, including the benefits of six million additional cycle trips, one million fewer car journeys and 40,000 fewer sick days per annum.²

1. Rijkswaterstaat (2021) "Case Study Bicycle Infrastructure RijnWaalpad"

2. C40 Cities Climate Leadership Group (2021) "Cities100: Copenhagen's Cycle Superhighways make winners of both people and the climate"

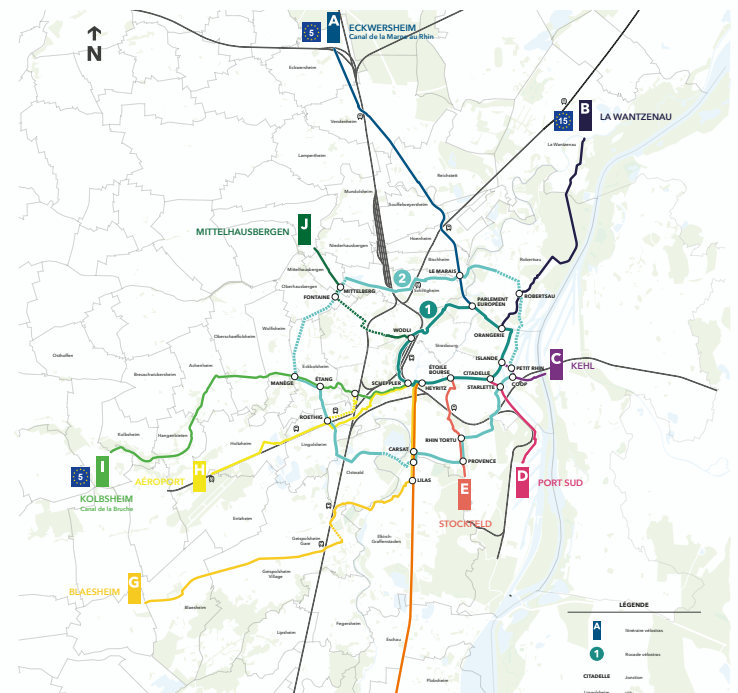
Wayfinding is a system of signs, graphics, and environmental information that people use to orient themselves and navigate within a geographic context. Wayfinding systems allow both visitors and locals to understand their location within a city, making destinations easy to locate and routes easy to choose. Pavement markings play a key role in reinforcing the ease-of-use of wayfinding. Wayfinding systems rely on legible and uniform pavement markings to accompany signage, especially as vertical signage can at times be confusing against the backdrop of a complex urban landscape*.

Unlike automobile wayfinding systems, micromobility wayfinding points users in the direction of desirable locations in a relatively smaller geographic area. A micromobility-oriented system should guide and provide users with directions to destinations that are easily accessible and can be reached in 20-30 minutes.

Wayfinding elements are to be used at points and on stretches where the user may be in doubt if they are on the right course. As such markers should be placed before and after joining route convergences, and at maximum 3 km intervals along straight aways (though the more frequently they better).

When done properly, wayfinding helps improve transportation habits by promoting easy walking, cycling, and can support local businesses by allowing them to be more easily found, encourages tourism, and assists City marketing campaigns. Detours during construction periods can also be clearly communicated with combined signage and pavement markings. Wayfinding should be **consistent, coherent, and memorable** to help users develop mental maps and deepen a person's connection with the city.

WAYFINDING ILLUSTRATED



CORE ELEMENTS OF A WAYFINDING STRATEGY:

Any successful wayfinding strategy is user-led and recognises that wayfinding is a three-step problem solving process:

1 SEARCH

To go from A to B, the user must first be able to understand where they are, in order to find their destination. Destinations must be recognisable — a wayfinding system fails if the user reaches their destination without recognising they are there.

2 DECISION

Easy route planning should be a priority, allowing the user to make an informed decision about their journey. A wayfinding system for pedestrians and bicycle users can be destination-based (A to B) as well as experience-based (points of interest).

3 MOTION

Users should be guided at set points along their chosen route. Close attention should be paid to points or places that may confuse the user. Messages should be quick to decode, especially for bicycle users who are moving at a faster pace than pedestrians. Ideally the user should be able to complete their journey with little to no stops.

*RISE Research Institutes of Sweden, 2019. Modell för att mäta oskyddade trafikanters uppmärksamhetsfördelning som funktion av trafikmiljöers utformning och standard.

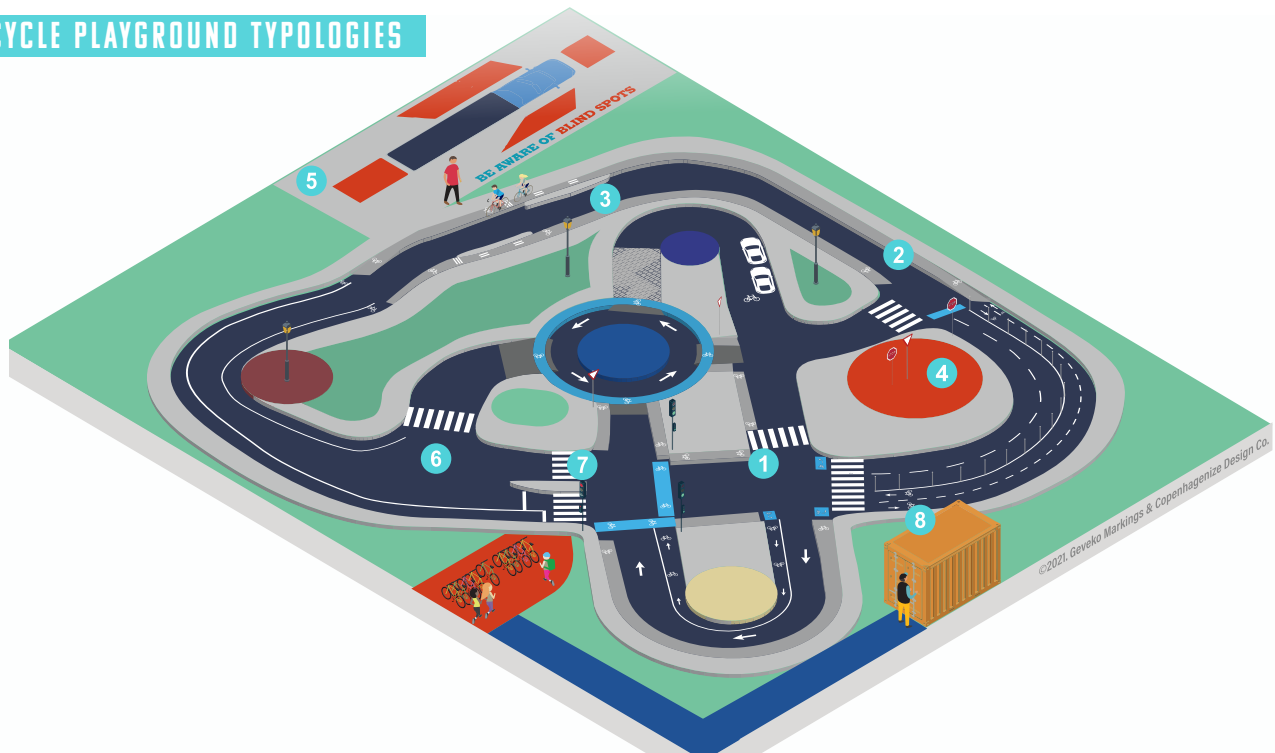
'Bicycle playgrounds' are public spaces dedicated to learning about cycling in a fun and engaging way. They provide a safe place for theoretical and practical teaching on cycling, from knowing how to pedal, to properly using public roads.

Mainly aimed at children, they can also accommodate adult learners, people with special needs, the elderly, and anyone else who may feel insecure riding on the road without appropriate training.

Usually consisting of an outdoor track, with the appropriate street layout, road signs and landscaping appropriate for the local context, they can be complemented by indoor spaces to store loan bicycles or provide classroom teaching.

By using scaled down versions of existing facilities for pedestrians and cyclists, users are allowed to familiarise themselves with real-world scenarios in complete safety, before having to face real traffic.

BICYCLE PLAYGROUND TYPOLOGIES



KEY FEATURES

- 1 Local street and junction designs including clear, reflective or high contrast road markings which show real-world scenarios.
- 2 Local street signs and road markings, such as stop signs or pedestrian crossing.
- 3 Common obstacles such as bus stops, car doors, tram tracks, or cobblestones.
- 4 Coloured slip resistant area markings to provide orientation, destinations and meeting places for children.
- 5 Preformed horizontal pictograms of cars or lorries to practice overtaking and braking.
- 6 Specific road layouts, for practicing motor skills and maneuvers.
- 7 Traffic lights, if electricity allows, or otherwise manually operated signs which encourage play and engagement.
- 8 Storage for teaching equipment and loan bicycles.

CASE STUDIES

Cities throughout the world have built educational tracks to encourage cycling and better road-craft. The most successful have been designed to match specific local circumstances and needs. **White Center Traffic Garden**, Seattle (US) is a former tennis court which has been re-purposed with a miniature street pattern to teach basic traffic skills to a diverse community, while **Trafiklegepladsen** in Copenhagen, DK contains 775 meters of scaled down roads including carriageways, cycle paths, sidewalks and traffic signals.

And **Le Jardin du Petit Monde a Bicyclette** in Montreal, CA transformed a car park into a colourful and attractive learning experience that hosts school classes on weekdays and teaches children about urban street design as well as delivering more practical classes.

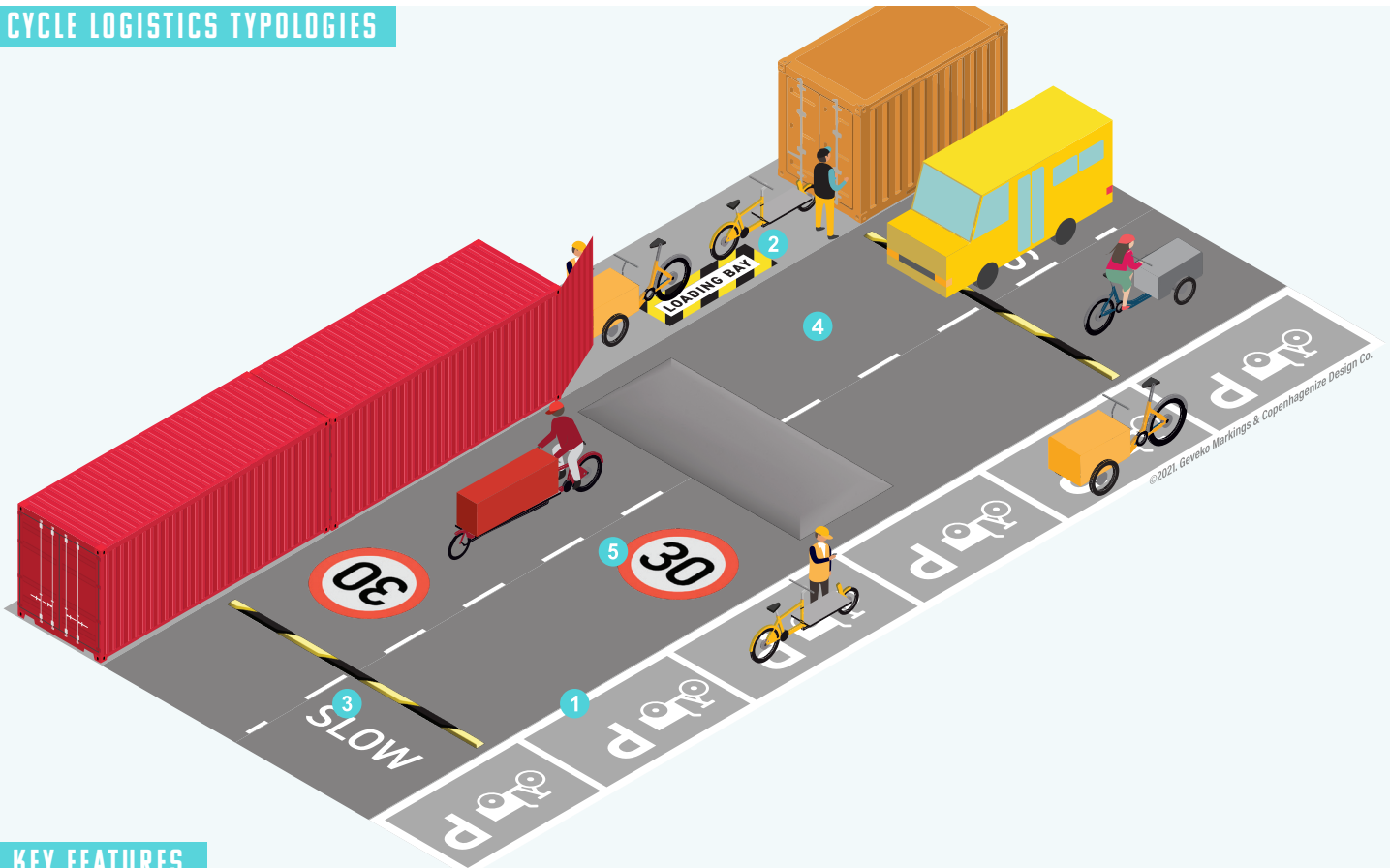
As online shopping expands, so does the number of vans and lorries required to deliver those goods, particularly in residential neighbourhoods. This has caused increasing concern about the pollution, road danger and traffic congestion that they can generate.

Cyclelogistic firms replace vans with cleaner and quieter cargo bikes for that last mile delivery, and are seen by many as the future of delivery services in our towns and cities.

To do this they require well located space, ideally in areas with a high population density, narrow roads and access to arterial roads, but these spaces can be either too expensive, or simply unavailable on many areas.

So municipalities have encouraged the development of these firms through flexible regulations and thoughtful design which requires minimal hard construction and which can be easily removed, once a business finds a permanent location.

CYCLE LOGISTICS TYPOLOGIES



KEY FEATURES

- 1 Clearly demarcated space for cargo bike parking identified by preformed horizontal pictograms
- 2 Clearly demarcated space for goods delivery and loading marked by clear, reflective or high contrast road markings and signage
- 3 Slip resistant area markings, to draw motorists' attention to potential danger zones
- 4 Well maintained asphalt surfaces that have been treated for potholes, cracks and irregular surfaces that can pose a risk to bikes and pedestrians.
- 5 Traffic calming and speed restrictions such as 30 km/h zones, to slow down vehicle traffic near delivery staff.

CASE STUDIES

In Berlin, DE **KoMoDo** (cooperative use of micro-depots) brought together major logistics firms such as DHL, DPD, UPS and more to share on-street cycle logistics hubs and convert more of their deliveries to cargo bike. Over 12 months they used eleven cargo bikes to deliver 160,000 parcels and covered 38,000 km in the city, reducing emissions and congestion.¹

In Brussels, BE the delivery firm **TNT** used modified shipping containers to deliver in three central districts and in just three months managed 5,268 deliveries, 1,292 pick ups and travelled 4,534 km by cargo bike. This reduced Co2 emissions by 24% and PM 2.5 by 59% when compared with traditional vans.²

¹ KoMoDo (2019), "Final Report" www.komododo.de

² S. Verlinde et al. (2014) "Does a Mobile Depot Make Urban Deliveries Faster, More Sustainable and More Economically Viable?" *Transport Research Procedia* 4

Activity is well known to benefit children's physical and mental health, as well as correlating with increased concentration and academic performance in teenagers.¹ Yet in countries across the world children's physical activity levels have been declining, with fewer children than ever achieving 60 minutes per day.²

Further, in some cities over 25% of morning traffic is related to the school run, causing congestion, pollution, noise, road collisions, and ultimately making our environments worse places to live.

Tools like 'School Streets', where roads near schools are redesigned to put children's needs first, make it easier and safer for families to make the decision to walk or cycle to school, and reduce those harmful impacts.

The benefits can include more opportunities for healthy, physical and social activities, less stress for parents and lower impacts on nearby residents.

SCHOOL STREET TYPOLOGIES



KEY FEATURES

1. Timed restrictions on car access at drop-off and pick-up times, with clear signage and road markings.
2. Low-speed zones indicated via preformed horizontal signs.
3. Cycle lanes and pedestrian areas, clearly demarcated using preformed pictograms
4. Raised crossings to slow down traffic and assist wheelchair and buggy users. They should be clearly marked with zebra crossings when appropriate.
5. Friendly streetscapes, using coloured high friction area markings which highlight the presence of children.
6. Cycle parking which is sufficient, secure and well sign-posted.
7. Active maintenance that ensures surfaces are not potholed or pitted and are well-drained.

CASE STUDIES

School streets have been implemented in a wide range of countries and situations, with cities like **London, GB** (pop. 9 million) having implemented 383 School Streets by 2021. With some schools reporting over 50% fewer children taking the car, it has become a key part of the city's strategy to reduce congestion, improve air quality and create better places.

While in the major tourist destination **Den Haag, NL** (pop. 500,000) over 15 streets with the worst congestion are now closed to motor traffic during drop-off and pick-up times. Combined with an extensive cycle network now over 60% of secondary school children cycle to school.

And in the even smaller city of **Odense, DK** (pop. 200,000), the local municipality has replaced on-street parking with play equipment, traffic calming and colourful road markings outside certain schools and now sees 4 out of 5 children cycle, walk or scoot. Local politicians boast that it's made them the most child friendly cities in Denmark.

1. R.Reigal et al. (2020) Physical Fitness Level Is Related to Attention and Concentration in Adolescents, Frontiers in Psychology
2. R. Guthold et al. (2019) Global trends in insufficient physical activity among adolescents, The Lancet

