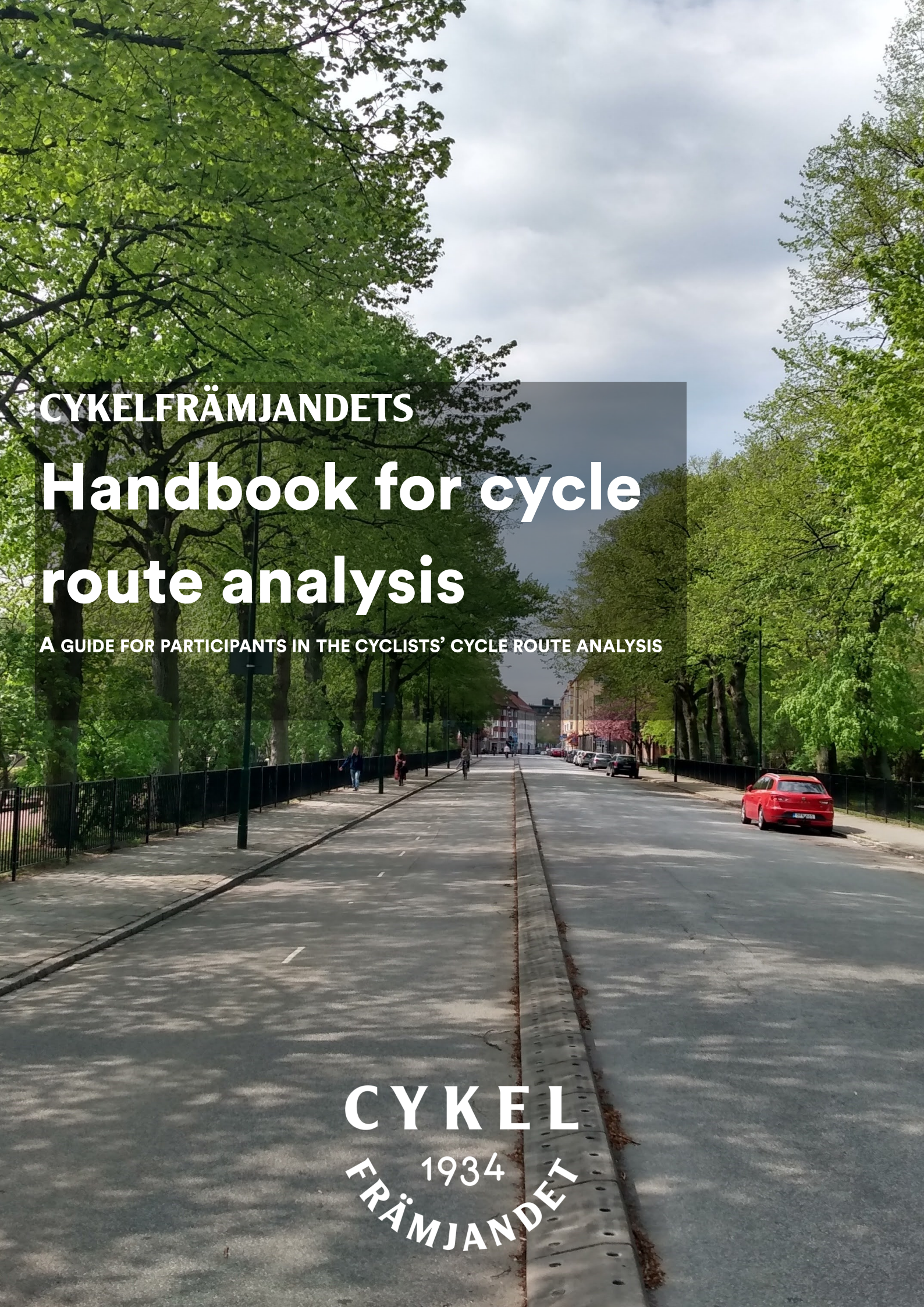

CYKELFRÄMJANDETS

Handbook for cycle route analysis

A GUIDE FOR PARTICIPANTS IN THE CYCLISTS' CYCLE ROUTE ANALYSIS

CYKEL FRÄMJANDET 1934

Handbook for cycle route analysis
A guide for participants in the cyclists' cycle route analysis
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Content

Introduction

The Cyclists' Cycle Route Analysis is part of a process aimed at improving the cycling infrastructure in Swedish cities. The basis for the analysis is not how many kilometers of bikeways that exist, but how good the main bikeways in the cycle network are. The quality of parking, wayfinding and other parts of the infrastructure are also analyzed.

This handbook is written for people who cycle and want to contribute to better cycling infrastructure.

The analysis is based on a number of identified cycle routes. The cycle routes are bikeways that fit into the category 'Main Bikeway' in the Swedish National Road Database, NVDB. There are no direct requirements for the quality of a main bikeway, although some municipalities have created their own or use other design manuals. However, there is a lot to be said about what distinguishes good cycle routes from poor ones and this is where the analysis comes in. The analysis serves as a quality check of cycling infrastructure. If your city's goal is to build cycle routes of high standard, then they should meet the requirements in the list.

Cykelfrämjandet assume that the goal must be that main cycle routes should have high accessibility and are direct, safe, comfortable, and attractive. Cykelfrämjandet think that main cycle routes should be designed as main roads. Therefore, we reason that crossing traffic should be required to yield to people cycling.

Traffic safety is of course important in this context. However, the analysis is not only about road safety. If the only objective is to reduce accidents, this could be achieved by everyone staying at home, but then all the positive aspects of cycling would be lost. The starting point is to create cycling routes that attract more people to cycle, because cycling is unrivaled in terms of accessibility, attractive cities, reducing emissions and improving public health. (Brand, et al., 2021) (Gössling & Choi, 2015) (Keim & Cerny, 2021) A well-developed cycle network and lower speeds for motorized traffic can also lead to higher road safety for all modes of transport (Marshall & Ferenchak, 2019).

The cycle route analysis is not a complete analysis of the infrastructure. It highlights examples of problems found along the routes, but it is not certain that all problems that exist will be highlighted. The assessments are qualitative rather than quantitative. For example, if a stretch is perceived as too narrow, this is noted, without the need to measure the actual width.

On the next page is a description for the structure of the whole analysis. A checklist for the inspection is then presented which is followed by an explanation of the various statements in the checklist.

The guide has been produced by Cykelfrämjandet with financial support of the Swedish Transport Administration (Trafikverket).

The analysis step by step

The aim of the cycle route analysis is to improve the situation for people who cycle. In order to bring about change, it is helpful if decision-makers, public servants, and citizens have a common understanding of the current situation and of the problems that exist. A conversation between all those involved can be a good start. Anchoring is also important for the municipality to feel ownership of the issue. If an inventory is carried out unannounced and the finished report is emailed to a member of the municipality's staff, there is a risk that the survey will be sent straight to the archives.

There are two ways of carrying out the cycle route analysis.

	RIDE AND TALK TOGETHER	RIDE FIRST, TALK LATER
1	**Contact the city** and schedule a cycling workshop with them. 2-3 staff members and/or politicians should be involved. It is important that people with a mandate to change are involved. Local newspapers may also be interested.	**Tell the city** that you intend to carry out the cyclists' cycle route analysis and make sure they are positive about this. After all, you are doing an important job for them. It's good to get the municipality involved from the start.
2	**Identify the routes.** If the city has marked out the main cycle routes, then you should start with these. Otherwise, choose routes that you think would fit the road authority's Main Bikeway definition. Ask the municipality which routes they think are suitable.	**Identify the routes.** If the city has marked out the main cycle routes, then you should start with these. Otherwise, choose routes that you think would fit the road authority's Main Bikeway definition. Ask the municipality which routes they think are suitable.
3	**Inspect the routes.** Read the checklist and then cycle the whole route from start to finish, reflecting on the experience from the saddle. Then cycle again and take photos of any problems you find. Also take pictures of things you think are good. This is best done with a phone camera or other camera where the coordinates of the photo are saved. Either note all the problems while cycling or do it at home at your desk based on the photos. This can be done either digitally (according to separate instructions) or with a paper map and green and red pencil.	**Inspect the routes.** Read the checklist and then cycle the whole route from start to finish, reflecting on the experience from the saddle. Then cycle again and take photos of any problems you find. Also take pictures of things you think are good. This is best done with a phone camera or other camera where the coordinates of the photo are saved. Either note all the problems while cycling or do it at home at your desk based on the photos. This can be done either digitally (according to separate instructions) or with a paper map and green and red pencil.
4	**Choose a route** on which you had a lot of comments and carry out the cycling workshop. In the workshop you cycle together and stop at places to discuss what problems you have found, why it looks the way it does and how it can be fixed.	**Summarize a report** with comments, maps, photos, and the checklist.
5	**Summarize** everything in a report with comments, maps, photos, and the checklist and send it to both the city officials and the other participants in the workshop.	**Discuss** the findings at a meeting with decision-makers and planners where you walk through the routes on a map and show pictures of the obstacles.
6	**Follow up** after a year what has happened.	**Follow up** after a year what has happened.

Checklist for Main cycle routes

From..... To.....

The entire route	Not true	True to some extent	True to a large extent	Completely true
... should be coherent from start to finish and link important destinations				
... should be direct, have good orientability, and feel logical				
... should be marked out on cycle maps and have wayfinding				
Along sections				
... there should be sufficient width				
... cyclists' should have their own space				
... there should not be any sharp or unexpected turns				
... the road surface should be even				
... with mixed traffic there should be few motor vehicles and low speeds				
At intersections				
... the route should be prioritized in a way that crossing traffic yields to cyclists				
... waiting times at traffic lights should not be worse than for cars				
... level differences such as curbs or other should be avoided				
... there should not be any sharp or unexpected turns				
... the speed of crossing motor traffic should be low				
Additionally				
... it should be free of obstacles such as barriers and poles				
... good parking facilities should be available at destinations				
... it should feel safe				
... it should be functional around the clock, all year round				
... it should be in an attractive cycling environment				

THE ENITRE ROUTE

...SHOULD BE COHERENT FROM START TO FINISH AND LINK IMPORTANT DESTINATIONS

The cycle route analysis is based on main cycle routes in the city, i.e. cycling infrastructure that goes all the way from start to finish and connects important functions. The idea is to focus on roads that fit under the road category 'Main Bikeway' in the Swedish National Road Database, NVDB. In the Road Authority's Road and Street Design manual, VGU, there is a similar wording for what is called Main Network for Pedestrian and Cycle Traffic. Whatever the name, we have chosen to call it a cycle route to emphasize that we are looking after the function of cycling from start to finish where different types of cycle paths, cycle lanes, mixed traffic, and cycle streets can be included in the same route. Cohesion is the most basic requirement for a main cycle network according to the Design Manual for Bicycle Traffic (Rik de Groot, 2016).

Main Bikeway, definition by the National Road Database
The main bikeways should form a "skeleton" or "backbone" of bikeways within the urban area. Connect different parts of an urban area - i.e. shorter than regional bikeways, traffic volumes may be higher than on regional bikeways. Accommodates the need for longer distances within an urban area. The network connects different parts of the city with each other - and with other important destinations - and forms a coherent main cycle network. Can shift to a local bikeway - where, for example, smaller residential bikeways connect to main bikeways with larger traffic flows. May shift to a regional bikeway - where, for example, a longer distance route outside urban areas is considered to start. [translated]

Main network for Pedestrian and Cycle Traffic according to the Road Authority
The network of links formed in the urban area by pedestrian, cycling and moped ways and other paths dedicated to pedestrian and cycle traffic between neighborhoods (Trafikverket [a], 2021). [translated]

Few Swedish cities have main bikeways marked out in the national road data base. Some cities have pointed out their main cycle routes in their strategic documents, although their names may vary. If your city does not yet have any official main cycle routes, you can select the appropriate routes yourself. The city's bus route network can be helpful in identifying the routes. The routes to be inspected should at least link the areas and destinations served by the city bus, from the outskirts to the city center. If the city looks like a star, the routes should go out to all the tips; if it looks like a banana, it should go all the way between the ends.

The main cycle network should connect the different parts of the city.

...SHOULD BE DIRECT, HAVE GOOD ORIENTABILITY, AND FEEL LOGICAL

If you look at a map, does the current route take any large detours? Should the route go another way? Is there a missing cycle path or bridge that would provide a more convenient route? In the Cykelfrämjandets Cyklistvelometer 2018, almost 40% of respondents said that the main motivation for cycling is that it is fast and easy (Enkätfabriken AB, 2018). There are places in cycle networks where people are forced to cycle in the wrong direction for a while to be able to continue forward again. This is not a logical way and makes the orientation of the route more difficult.

At interchanges it is common for the bikeway to make a large detour while the motor traffic continue straight ahead.

...SHOULD BE MARKED OUT ON CYCLE MAPS AND HAVE WAYFINDING

The route should be marked out on cycle maps and the route should have wayfinding to the various destinations linked by the cycle route.

By marking the cycle route in strategic documents is it less likely that the route suddenly disappears or is forgotten in the wider planning of the city.

Signs with wayfinding makes it easier to find the way.

Along sections

The route can consist of cycle lanes, cycle paths along traffic lanes, detached cycle paths, and cycling in mixed traffic.

...THERE SHOULD BE SUFFICIENT WIDTH

What is sufficient width? A minimum for a bidirectional cycle path classified as a main bikeway must be that it is possible for two cargo bikes to pass each other. It should also be possible to overtake a regular cycle while passing someone in the opposite direction. The closer to the center the route gets, the wider it should be, as the number of people cycling is likely to increase. This is also where the lack of space tends to be greatest. But the more motorists who cycle, the more space is freed up in the city. It is not necessary to measure how wide the cycle route is, but if you experience the width to be a problem, then make a note.

It should be easy to pass oncoming people.

Ride on the asphalt and walk on the tiles. A clear visual separation—at least as long as there is no snow.

...CYCLISTS' SHOULD HAVE THEIR OWN SPACE

In addition to sufficient width of the cycle path, there should be space for pedestrians next to the cycle path. If it is a mixed pedestrian and cycle path, there should be a clear separation. According to research from VTI, conflicts with pedestrians have a negative impact on comfort and often occur when there is unclear separation between the pedestrian and cycle path and where the paths are too narrow (Wallén Warner, et al., 2018). Here it may also be appropriate to point out that main cycle routes should not go through places mainly for children and strollers, for example across squares or through city parks. Cycle routes are, after all, traffic routes.

...THERE SHOULD NOT BE ANY SHARP OR UNEXPECTED TURNS

Sharp and unexpected turns negatively affect directness, road safety, and comfort on cycle paths. Turning radii should be well proportioned and the cycle path should not be narrowed at turns. Do not just accept the change of side during the inspection. Why does it suddenly change side – and could it have been avoided?

Why cannot the cycle path continue on the same side all the way?

...THE ROAD SURFACE SHOULD BE EVEN

The road surface should be even along all sections. In particular, the pavement should not be worse than the in the lanes for motor traffic right next to it. Researchers at the Swedish Cycling Center note that "smooth, well-maintained and properly constructed cycle paths are a cornerstone for safe cycling" [translated] (Wallén Warner, et al., 2018, p. 51).

Cracks and holes in the surface reduce the comfort and can pose a safety risk.

...WITH MIXED TRAFFIC THERE SHOULD BE FEW MOTOR VEHICLES AND LOW SPEEDS

Main cycle routes should be mainly car-free, but sometimes that is not possible. When the street is mixed traffic, there should be few motor vehicles and low speeds so that it feels safe to cycle in the middle of the street. This should particularly be true when there are parked cars and there is a risk of getting "doored".

Mixed traffic can work fine on a calm street.

At intersections

Intersections can be designed in many different ways, but it can be wise to try to have a consistent layout within a city, or at least along each route. About 70% of cycling fatalities occur in collisions with motor vehicles. In urban areas, most fatal collisions occur at intersections. (Wallén Warner, et al., 2018)

...THE ROUTE SHOULD BE PRIORITIZED IN A WAY THAT CROSSING TRAFFIC YIELDS TO CYCLISTS'

There is no requirement in any Swedish manual for main bikeways that crossing traffic must yield. However, we think that it is a lack of quality if that is not the case. After all, these are the most important cycle routes in the city, and they should be given priority.

A so called 'cykelöverfart' where cars must yield.

In the Swedish context, there are several ways of designing intersections so that crossing motor traffic must yield to the people on the bikeway. For the purposes of the analysis, the way in which it is done does not matter. What matters is that it is safe, comfortable, and direct. If there is uncertainty about who should yield to whom, then that is also a sign that the intersection is poorly designed.

A raised cycle path and shark teeth in the car lane. Here motor traffic must yield as well.

...WAITING TIMES AT TRAFFIC LIGHTS SHOULD NOT BE WORSE THAN FOR CARS

There should be detection so the signal switches when a cyclist arrives without having to press a button. Waiting times should not be longer than for motorists. If you must press the button to get a green light, the button should be easy to reach and there should preferably be a railing to lean against.

Regarding cycle lanes, it should be clear how cyclists can turn left at the intersection without the risk of getting hit by motor vehicles and right-turning motor traffic should not pose any risk for cycling straight ahead.

A rail to lean against makes it more comfortable to wait for the green light. It also result in fewer people walking in the cycle path.

...LEVEL DIFFERENCES SUCH AS CURBS OR OTHER SHOULD BE AVOIDED

There should not be any uncomfortable level differences at intersections. Certainly, there should not be elsewhere either. However, at intersections they are common and can often be explained by more or less logical reasons. During the inspection, they should be noted, how the city then chooses to solve it is up to them.

Sharp raised curbs makes it more difficult and less comfortable to cycle.

It is easier to pass when the cycle path is in the same level through the intersection.

...THERE SHOULD NOT BE ANY SHARP OR UNEXPECTED TURNS

At intersections there are often sharp turns. As a cyclist, you may be so used to them that you do not even think about them, not least because the turns are explainable. It may be to make room for cars to wait next to the cycle path or because lack of space, particularly at roundabouts. But check the alignment and question the design. Compare with the motor lanes.

Sharp turns in the cycle path while the car lane continues straight.

...THE SPEED OF CROSSING MOTOR TRAFFIC SHOULD BE LOW

The speed of a motor vehicle in a collision affects the severity of the damage. The risk of death is 4-5 times higher at a speed of 50 km/h compared to 30 km/h. (Wallén Warner, et al., 2018)

Additionally

Other points sometimes coincide with intersections or sections and sometimes not.

...IT SHOULD BE FREE OF OBSTACLES SUCH AS BARRIERS AND POLES

Obstacles in the bikeway can be the result of negligence, such as poles, electrical cabinets, or bus stops, but they can also be intentional, such as bollards. Either way, they are not acceptable and should be noted. Bollards may sometimes be required to stop vehicular traffic on the bikeway, but then they must be well designed so that they can easily be seen and do not obstruct pedestrian and cycle traffic.

It should not look like this.

If the intention is to stop motor vehicles, than there are better ways then blocking almost the entire cycle and pedestrian path.

...GOOD PARKING FACILITIES SHOULD BE AVAILABLE AT DESTINATIONS

There should be good parking facilities at destinations along the route. This is as obvious as bus stops for the bus. But one difference from the bus is that cycle parking should not be located right at the route but rather at the entrances to the destinations. The parking spots should be visible from the route, and it should be clear how to get there. Cycle parking should allow for frame locking and accommodate different types of cycles.

At train stations there should be plenty of cycle parking.

Weather protected parking facilities are preferred at locations where people are expected to park for longer periods of time.

...IT SHOULD FEEL SAFE

Cycling on the route should feel safe. Tunnels should not be dark and feel unsafe and bushes should be trimmed so no one can hide in them. There should be lighting along the route.

Narrow and dark tunnels can feel unsafe.

Wider, lighter tunnels can be experience as safer.

...IT SHOULD BE FUNCTIONAL AROUND THE CLOCK, ALL YEAR ROUND

For the route to function 24 hours a day, all year round, it must be lit and given priority in winter road maintenance. You can ask the municipality of their routines. But to know the actual outcome, the route has to be cycled both in the evening and during different seasons.

In addition to lighting, there should also be reflective markings to make it easier to stay on the path.

The route should also have acceptable drainage to maintain function when it rains. Wet leaves and sand should be swept away when required in spring and autumn. According to a compilation by VTI, about 8/10 of all serious injuries related to cycling occur in single-vehicle accidents and the most common cause of single-vehicle accidents is slipping due to ice, snow, gravel, or wet leaves (Wallén Warner, et al., 2018).

Gravel or other loose material increase the risk of accidents.

...IT SHOULD BE IN AN ATTRACTIVE CYCLING ENVIRONMENT

An attractive cycling environment makes it easier to choose the bike and increases the benefits of cycling. In practice, a pleasant cycling environment means that the route is not too noisy or too polluted. There should preferably be greenery, lively places, or an otherwise pleasant environment along the route. An attractive cycling environment is one of the five criteria for creating a well-functioning cycle network, according to the Design Manual for Bicycle Traffic (Rik de Groot, 2016). Although vegetation along the cycle route can be pleasant, it should not grow into the bikeway or reduce the visibility at intersections.

Green environments can be experienced as pleasant to cycle in.

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CYKELFRÄMJANDET

Cykelfrämjandet is a Swedish cycling advocacy organization. The organization works with promoting the interests of all cyclists' so that more people can and want to cycle more. We work to create a better, safer and more attractive cycling environment. Our members are organized in local units, from north to south, and carry out many of the activities in the organization. Cykelfrämjandet has an office in Stockholm and volunteers all over the country.

Since the start, Cykelfrämjandets goal has been to bring together all kinds of cyclists'. Our vision is a cycling world where more people can enjoy the benefits of cycling.

www.cykelframjandet.se

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