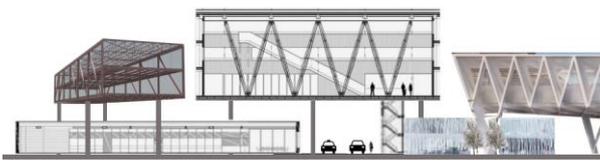


# Guideline for the Additional requirements to industrial estates

This guideline imposes additional requirements  
outside the technical and legal regulations  
for transport, people and nature



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<https://www.girnerest.de/jm/108954503412793450/>

Industrial estates: multi-storey construction



Sufficient roads for all road users



New possibilities for cycling

References and further details:

[https://planungspraxis.bund-wiki.de/index.php/Anwendungsbeispiele\\_aus\\_rechtsverbindlichen\\_Bebauungspl%C3%A4nen](https://planungspraxis.bund-wiki.de/index.php/Anwendungsbeispiele_aus_rechtsverbindlichen_Bebauungspl%C3%A4nen)

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## Part I: Traffic-related view of an industrial estate

This document describes the requirements for industrial estates. The building regulations, regulations, DIN standards and laws are not listed here, as they are assumed to be known. Should contradictions arise, the rules and regulations take precedence.

The questions and descriptions listed are intended to lead to an assessment of whether an industrial park at this point makes ecological and traffic sense. Furthermore, it should be shown what benefits this industrial park brings to the people who work, live and live here. The radius to be considered affects all those who have to expect a change and are to be included. This also applies to the required compensation areas.

**If new commercial areas are required, the existing commercial areas must first be checked to see whether the 1st or 2nd floor (as in the case of residential buildings) can be used. Building over the buildings, the halls, the parking lots and the traffic areas. (According to III 3.1)**

### **The finite topsoil:**

"The development of a one-centimeter-thick, humus-rich soil layer can take between 100 and 300 years – but can be lost to erosion in a single heavy thunderstorm."

[Soil development | Federal Environment Agency](#)

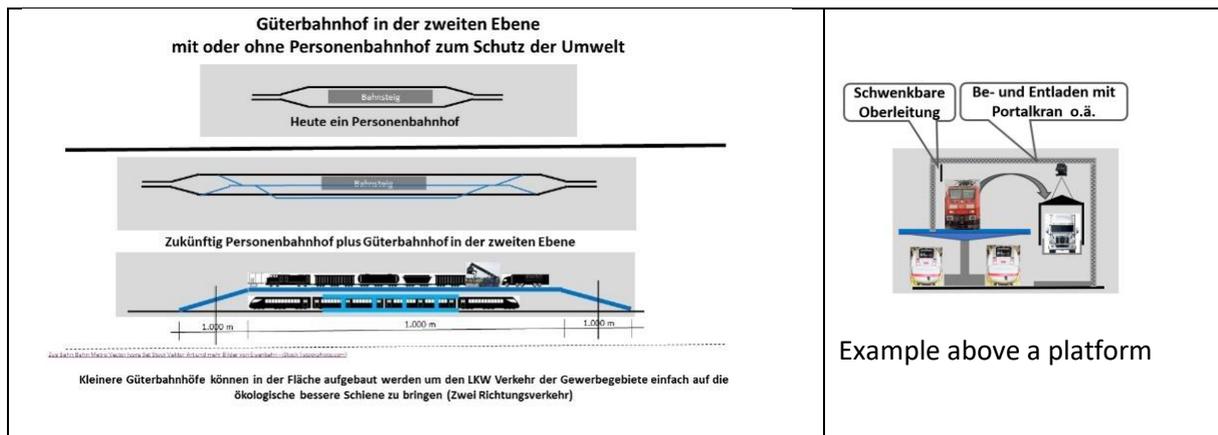
## 1. Rail siding for freight and passenger traffic

### **1. Freight transport by rail.**

In principle, from an ecological point of view, freight transport must be transported by rail.

The following questions and assessments must be documented:

- a. Where is the next siding, or where is a siding possible and when is it feasible?
- b. Where is the nearest siding that will allow crane and non-craneable trucks to be transferred to the rails, and how can this be achieved?
- c. Is there a freight station at a maximum distance of approx. 50 km that can be reached without passing through towns and that can transfer crane and non-craneable trucks onto wagons or similar?
- d. Are the existing or possible tracks capable of meeting the requirements of the planned industrial estate? For example, 8,000 trucks are expected daily, 3.5 – 40 tons. Can these quantities be absorbed by rail: loading technology, freight wagons and train units?
- e. What connections are there for inter-urban connections, to ports, major cities, large freight stations?
- f. Head journeys are to be listed, travel time problems and other possibilities are to be presented,
- g. If new construction is required, an appropriate timetable must be drawn up and interim solutions must be described and evaluated (new lines need at least 10 years).



- h. Are there possibilities to build a freight yard over a passenger station or over existing tracks, i.e. use of the second floor, possibly with known flyover structures. Truck traffic must be shifted to rail for environmental and economic reasons.

## 2. Passenger transport by rail

The following questions and assessments must be documented:

- Where is the nearest passenger station and how can it be reached barrier-free by the individual companies?
- Which trains run here at what times, timetable dates, and where to.
- Is it possible to admit employees on the basis of the number and working hours as well as shift times (can the planned e.g. 4,000 employees travel to and from work by train, shift times)?
- There are secure storage facilities for bicycles in both places, company and station,
- What are the travel times by bike or bus from the station to the company? Topic of safe footpaths and cycle paths. (see also cycle paths)

## 2. Motorway access with or without local thoroughfares

The following questions and assessments must be documented:

- Is the motorway connection accessible without passing through the village?
- What is the distance to the motorway junction without passing through town, km and travel time?
- Are new roads necessary for motorway access? Who bears the costs and provides the maintenance? Current guidelines for footpaths and cycle paths (RAST 06, ERA, EFA and H-RVS, etc.) must be observed for these new buildings.
- What additional benefits does the construction of new roads bring to people?
- For these new buildings, an ecological report must be prepared in which the ecological footprint is calculated and evaluated.

### 3. Other access roads, with or without local thoroughfares

The following questions and assessments must be documented:

1. Are the access roads sufficient to accommodate the traffic volumes, including the footpaths and cycle paths, also for cargo bikes, 3-wheelers and bicycles with trailers.
2. Are the surrounding intersections sufficiently developed?
3. Can the pedestrian and cycle path crossings at the intersections be used sufficiently and quickly for these quantities?
4. How can these intersections be improved without further impervious surfaces?
5. If, for example, 5,000 jobs are created, how do these people get to their workplace in a short time with their car? It may be necessary to drive 4,000 vehicles in the morning and 4,000 vehicles in the evening. In addition, there are the planned arrivals and departures of the trucks (an example from Elmpt, 8,000 trucks daily, 3.5 to 40 tons).
6. How is the truck traffic guided, up to the motorway or the freight station? Which residential areas will be additionally burdened, which routes to school, etc.? Are these roads sufficiently dimensioned, including the footpaths and cycle paths, also for cargo bikes, 3-wheelers and bicycles with trailers.

### 4. Public transport terminals and stops

The following questions and assessments must be documented:

1. If sufficient lines are planned in the industrial park, express buses and metro buses must also be taken into account.
2. When will the lines in the industrial park be ready for operation?
3. If sufficient stops are planned for the employees in the industrial park,
4. Reserve stops for expansions must be planned,
5. The longer the walks, from the workplace to the bus stop, including changing clothes and personal hygiene, the earlier the buses have to arrive or the later they have to leave. 30 minutes is short times for the sometimes long walks from the workplace to the bus stop.
6. If, for example, about 5,000 employees work in this industrial area and only 1,000 are in shift work (06:00 to 22:00), 500 people would have to arrive from the surrounding area at about 05:30, i.e. 10 articulated buses with 55 seats, or 12 normal buses with 43 seats each.
7. In addition, around 10:30 p.m., 10 articulated buses or 12 normal buses would also have to drive people home, including the corresponding connections. Travel times of approx. 1.5 hours must be taken into account. Can this be provided?
8. How are the neighbouring villages and residents affected by these buses?
9. Noise reports are to be prepared if there are about 5 buses driving through the village at 11:00 p.m.,
10. If public transport cannot afford it, car journeys will increase accordingly and put even more strain on the villages.

## 5. Footpaths and cycle paths to the industrial park

The following questions and assessments must be documented:

Note from the StVO: Two-track bicycles do not have to ride on a cycle path, they are allowed to use the road. Therefore, special emphasis should be placed on the expansion of cycle paths.

1. Footpaths and cycle paths are to be expanded in accordance with the specifications RAST 06, ERA and EFA, as well as H-RSV from 2021. The intersections must be clearly structured and marked for the different road users.
2. The access roads to the industrial park are to be expanded, especially for pedestrian and bicycle traffic, including cargo bikes, in order to safely thread the larger demand.

[Paketzustellung: News & Hintergründe | Lebensmittel Zeitung](#)



[DHL kombiniert Lastenräder mit Klein-Containern | elektrobike-online.com](#)



[Hermes testet Paketzustellung per Lastenrad in Berlin | Hermes Newsroom \(hermesworld.com\)](#)



3. Intersections are to be given crossings at all junctions, and demand-oriented traffic lights are to be set up. A permanent green for pedestrians should be planned so that other road users only switch when necessary.
4. Roundabouts should be modified or dismantled accordingly. Roundabouts have significant disadvantages for cycling.
5. Free right turns should also be dismantled to reduce speeds when turning.
6. Accessibility must be ensured.
7. The lowering at property entrances is to be laid out in accordance with Figure 3 of the EFA 2002, page 14.

## 6. Conclusion on traffic technology

The individual points are summarized and a corresponding conclusion is drawn up.

### Text from another review as an example:

"In terms of transport and from a climate point of view, this industrial park is "not" feasible at this location and the economic viability has "not" been proven. It leads to ongoing burdens for the municipalities that are "not" listed. The health problems of local residents are also "not" listed.

Therefore, it is necessary to lay:

1. A location would be ...
2. Another location..."

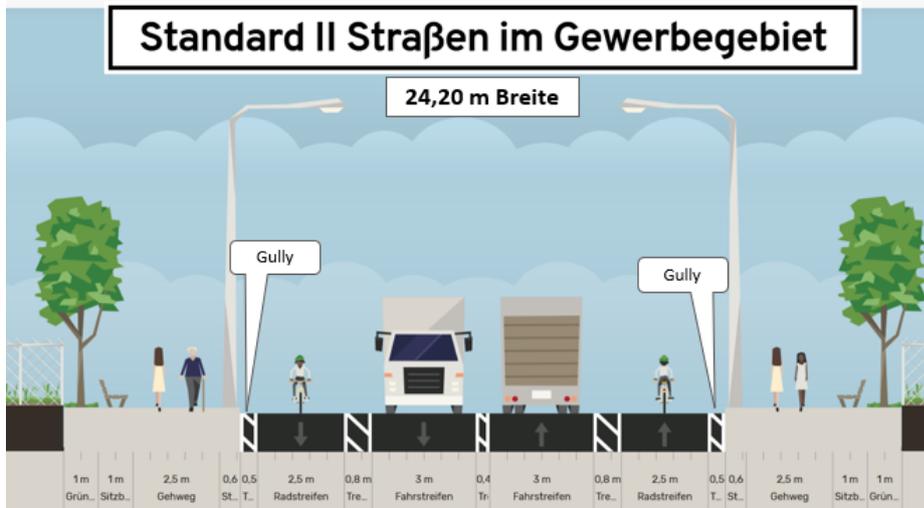
Alternative locations are to be listed with corresponding advantages and disadvantages.

For the alternatives, the following data is required:

1. A siding must be available, or must be quickly realizable, i.e. be nearby, if necessary with new tracks, not in 10 years.
2. A siding for loading the crane and non-craneable trucks must be accessible within a range of approx. 50 km without passing through towns,
3. There must be at least one motorway junction without passing through towns.
4. It must be possible to provide efficient public transport in good time for the existing working hours and the number of employees.

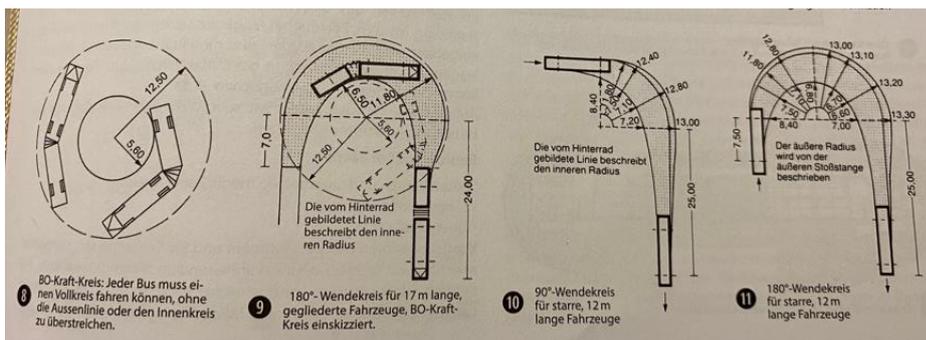
From the point of view of the climate and environmental pollution as well as the burden on local residents, new infrastructure buildings must be kept as low as possible.





### 3. Curve radii

Here are the data for the curve radii of the trucks at intersections and entrances to the companies:



(Excerpt from Neufert)

### 4. Roundabouts

Roundabouts should not be built in commercial areas, as they severely disadvantage cycling and there is an increase in accidents involving cyclists. The exception would be a routing of motorized traffic in the second level above or below, but this is ruled out for cost reasons.

### 5. Traffic lights

Traffic light circuits should react to demand and not use fixed time specifications. Pedestrian and bicycle traffic should also be reacted to, and they should remain below 20 seconds waiting time, or react immediately. If necessary, all intersections and junctions can be equipped with traffic lights, which significantly reduces the risk of accidents. Permanent green circuits can also be used. Bicycle and pedestrian crossings are to be built at all junctions.

## 6. Intersections, junctions

Free right-turners are not to be built, as there are more accidents with pedestrian and bicycle traffic. The curve radii should be sufficient for the trucks, without using the opposite lanes, but at the same time slow down the curves to walking speed.

All lanes at intersections and junctions must be marked at least with shark teeth. In the case of traffic lights, bicycle and pedestrian crossings must be created in all directions, including zebra crossings if necessary. According to Standards I and II, the lanes should retain all widths, and the lanes of bicycle traffic must be marked completely in red in the intersection area.

**Here are two examples of the intersection area, which should be uniform for each commercial area:**



## 7. Pedestrians and cyclists

Pedestrians and cyclists are to be given special importance. In accordance with the current guidelines Rast06, EFA and ERA, sufficient width and safe paths should be provided here.

With the large number of trucks and car traffic of employees and guests, pedestrian and bicycle traffic plays a minor role and thus bears the greater risk. The narrowness of the roads, the many entrances and exits and manoeuvring, as well as the intersections, require greater attention to the most vulnerable road users and uninterrupted conspicuous marking of the paths when creating the traffic routes.

1. The cycle paths of the industrial park are to be connected to the cycle paths in the area without interruption. Existing cycle priority routes or cycle superhighways must be connected without interruption,
2. Cargo bikes, tricycles, bicycles with trailers should be taken into account that they can ride on the cycle paths and be overtaken. (According to StVO, they do not have to use the cycle path)
3. The commercial area is to be included accordingly in the cycle node network,
4. The footpaths of the industrial park are to be connected to the footpaths of the surrounding area without interruption.
5. All footpaths must be barrier-free in accordance with the standards,
6. The lowering at property entrances is to be created in accordance with Figure 3 of the EFA 2002, page 14,
7. In the case of footpaths, encounters between wheelchairs, strollers, etc. must be taken into account.

## 2. Requirements for social standards and parking concept

Requirements of truck drivers in the area of social standards:

1. Separate sanitary facilities, in accordance with the standards of e.g. campsites with approx. 4 stars and the Civil Status Act,
2. comfortable lounges,
3. Leisure rooms, according to the needs,
4. Outdoor facilities with quality of stay and circular routes including trimming equipment, etc., these should also be able to be used by employees,
5. Space for quiet noise-protected overnight stays, sleeping places,
6. make arrangements for the planned EU requirement to only allow overnight stays outside the truck,
7. set up sufficient garbage containers, which are emptied on an ongoing basis, on the entire site,
8. Free Wi-Fi on the entire site according to the current technical possibilities,
9. sufficient parking and waiting spaces in public areas with charging points,
10. Establishment of a traffic concept for safe walking and cycling,
11. take into account the manoeuvring and turning possibilities of the trucks,
12. Set up multilingual references to workshops and petrol stations in the area,
13. Set up multilingual references to shops and restaurants and food deliverers,
14. Multilingual information on overnight accommodation, with travel options e.g. bicycle rental, taxi or similar.

## 3. Requirements for employees in the industrial park

A concept must be drawn up as to how the planned employees can reach the workplace, except by car.

- a. Bus lines, railway lines must be set up and must be based on the working hours in the planned establishments. Shift times must be scheduled.
- b. Job tickets are to be offered to all employees, which will cover at least 30% of the ticket costs and should also be available for private use. Adjustments with co-payments are to be made possible in order to bring as many people as possible to public transport.
- c. Furthermore, financial offers for bicycles with trailers, cargo bikes and tricycles are to be set up for all employees so that people can switch to bicycles. Socially adapted offers are to be developed.
- d. The establishment of a daycare center with care of siblings, OGATA or similar is to be planned. Furthermore, a sufficiently large public children's playground should be planned, according to the working hours of the employees, alternatively places in the neighborhood with appropriate travel options can be provided.
- e. Service facilities such as canteens, sports, small supermarket and leisure facilities, high-quality recreation areas with a high ecological function as well as local supply facilities should be planned.

#### 4. Requirements for development options (development plan) and climate protection

The individual plots are intended to enable multiple different uses on different levels. This also applies to public roads and roads. The aim is to make better and more economical use of the area and to stop the waste of land resources. Climate protection is a priority here.

**If new commercial areas are required, the existing commercial areas must first be checked to see whether the 1st or 2nd floor (as in the case of residential buildings) can be used. Building over the buildings, the halls, the parking lots and the traffic areas. (According to II 3.1)**

#### 5. Requirements for the green areas in the industrial park

An overall concept for sufficient green spaces on the site to cool down the huge sealed areas is to be drawn up, furthermore:

1. For every 4 parking spaces, a tree slice is to be created, with a large-crowned tree,
2. Unused traffic areas are to be doubled for tree sheaths with a diameter of at least 5.50 m,
3. Overnight accommodation areas for truck drivers must be designed to be noise-protected,
4. Between the boundary facilities of the company premises and the footpaths, at least 1.50 m of green strips are to be created and maintained on an ongoing basis,
5. In the course of the access roads, large-crowned deciduous trees suitable for the location are to be planted as standard trunks with a minimum trunk circumference of at least 18-20 cm. For each tree, an open ground area with a minimum size of 5.50 m in diameter must be planted with ground-covering vegetation consisting of perennials or woody plants appropriate to the site or with sowing of grasses and herbs.
6. The internal road traffic area is to be planted in an avenue-like manner with large deciduous trees suitable for the location (final growth height > 20 m). (according to the planting list)
7. Decaying trees and shrubs as well as trees to be felled are to be replaced in the following planting period by woody plants according to the planting list.

#### 6. Requirements for drainage in the industrial park

The standards for the drainage systems are assumed to be known. The specifications are also defined:

- a. All paved areas on which vehicles drive are cleaned on the property with appropriate drainage systems and continuously maintained and maintained, in accordance with DIN standards,
- b. Paragraph a. also applies to railway tracks on the property,
- c. At the boundary of the property, all drainage pipes will be laid out with a well as a transfer station. The property owner is responsible, including permanent maintenance and care and self-checking,

- d. From this transfer well, it should be possible to infiltrate the drainage on the company's own premises,
- e. In the case of the sale of the property, the old owner remains responsible until he has informed the authorities of a new person in charge and the latter has signed the agreement,
- f. Regular monthly samples and / or values are handed over to the authority without being asked to do so (penalties are set in accordance with the Administrative Offences Act (OWiG)),
- g. The wells shall be inspected by the local authorities on an ongoing basis and shall be allowed free access at all times,
- h. ECO paving is to be laid wherever it is possible according to the legal requirements,
- i. The safe infiltration of clean water on one's own property has priority,

## 7. Requirements for the supply connections of the industrial park

The following documents must be prepared

- a. How is the power supply connected, including the feed-in from e.g. solar systems,
- b. How is the connection of the water supply carried out,
- c. How is the connection of the gas supply carried out,
- d. How is the connection of sewage disposal carried out,
- e. How is the connection of rainwater disposal carried out,
- f. How is the connection of the telephone and Internet supply including free Wi-Fi,
- g. What are the costs of the expansion,
- h. Is the expansion possible on time?

## 8. Cost view

The following documents must be prepared:

- a. Presentation of the exact costs of the necessary infrastructure costs, new roads including civil engineering structures (bridges, tunnels), as well as the expansion of the infrastructure including all supply connections and the footpaths and cycle paths.
- b. Proof of the costs for public transport connections, stops and lines, construction and maintenance,
- c. Proof of the total running costs for the municipality per year,
- d. Proof of the costs for traffic routing and the associated problems for nature, the climate and local residents, for construction and maintenance.
- e. Proof of the costs for the provision of the compensation areas, the construction and maintenance over the lifetime of the industrial estate.
- f. Proof of the loss and change (loss of performance) of all natural resources related to the next 100 years for soil, plants, animals, water, air and temperature for the small and large climate.

## 9. Climate view

What impact does the industrial park have on the climate?

- a. An overview of the impact on the climate for the plant and operation of the industrial park is to be drawn up: an ecological footprint.
- b. Contamination caused by increased car and truck traffic in terms of particulate matter due to tire abrasion, exhaust fumes and noise, as well as any drainage problems that may arise, must be presented. Separated according to the public areas and the individual operating areas.
- c. How are the huge sealed surfaces drained and cleaned?
- d. How are accidents, according to A61 accident 15.02.2022, covered (cleaning of the LOI asphalt surfaces)?
- e. The compensation areas must be adequately described and verified. It is not enough to buy the land, but it must also be ecologically improved according to the specifications, according to .dem points catalog. This involves investment and long-term care.
- f. The relevant documents and proofs, as well as maps with the compensation areas, must be published on the municipality's website and at the entrance to the industrial estate. This includes the detailed ongoing measures that must be ensured. Evidence is documented.

## Part III Requirements for business premises

### 1. Basic requirement for ownership

The commercial properties are to be leased so that they remain the property of the municipality. This is a loss for the budget, but in the long term the property remains the property of the municipality and it can always react accordingly according to new environmental requirements or environmental problems. Furthermore, **the 1st or 2nd floor (as in residential buildings) can be used more easily. Building over the buildings, the halls, the parking lots and the traffic areas. (According to 3.1)**

### 2. General requirements for those interested in a company premises

Some of the following descriptions can be entered into the development plans as binding specifications. e.g. plantings, solar systems and border systems.

Interested parties should provide the following evidence for the construction of a business premises:

1. Low-CO2 construction and maintenance, with indication of CO2 values,
2. Establishment of the plants according to cradle to cradle up to demolition, updating the documentation of all changes, and the ongoing maintenance work,
3. DGNB certification of planning and construction,
4. Green Building Certification,
5. recycling of components,
6. Technology leadership through key investments.

### 3. Requirements for land areas, traffic, green areas and boundary facilities

1. The company properties must create a planting strip on the fence and maintain it continuously with a width of at least 4.50 m, so that even large trees have sufficient root protection (according to RAS-LP 4, picture 7, page 23),
2. parallel to the property boundary along the public green area, large-crowned deciduous trees with a trunk circumference of at least 16 - 18 cm are to be planted and maintained at a distance of 2.0 m as a single-row row of trees with a center distance of up to 12.0 m, exits are to be replaced equivalently,
3. water surfaces that are as natural as possible can / should be created and must be maintained at least 2 times a year,
4. For each employee, at least 20 square meters of contiguous green spaces, recreation areas with circular paths are to be created on the site and maintained at least 2 times a year, with seating and smaller roofs and trim equipment or similar, these are to be continuously adapted to the needs of the employees,
5. all planting strips, tree slices and green areas are to be planted extensively according to the planting list with shrubs suitable for the location and at least one individual tree, outlets are to be replaced on an ongoing basis,
6. It must not be possible to drive over tree slices and other green areas and must be secured accordingly with curbs, boulders, tree trunks, perennials or the like, with the exception of paths.

### 3.1 Sketches for company buildings and use in floors

Our resources on earth are finite. Conclusion: we have to be much more economical with the Bypass land.

**If new commercial areas are needed, the existing commercial areas must first be checked to see whether the 1st or 2nd floor (as in the case of residential buildings) can be used.**

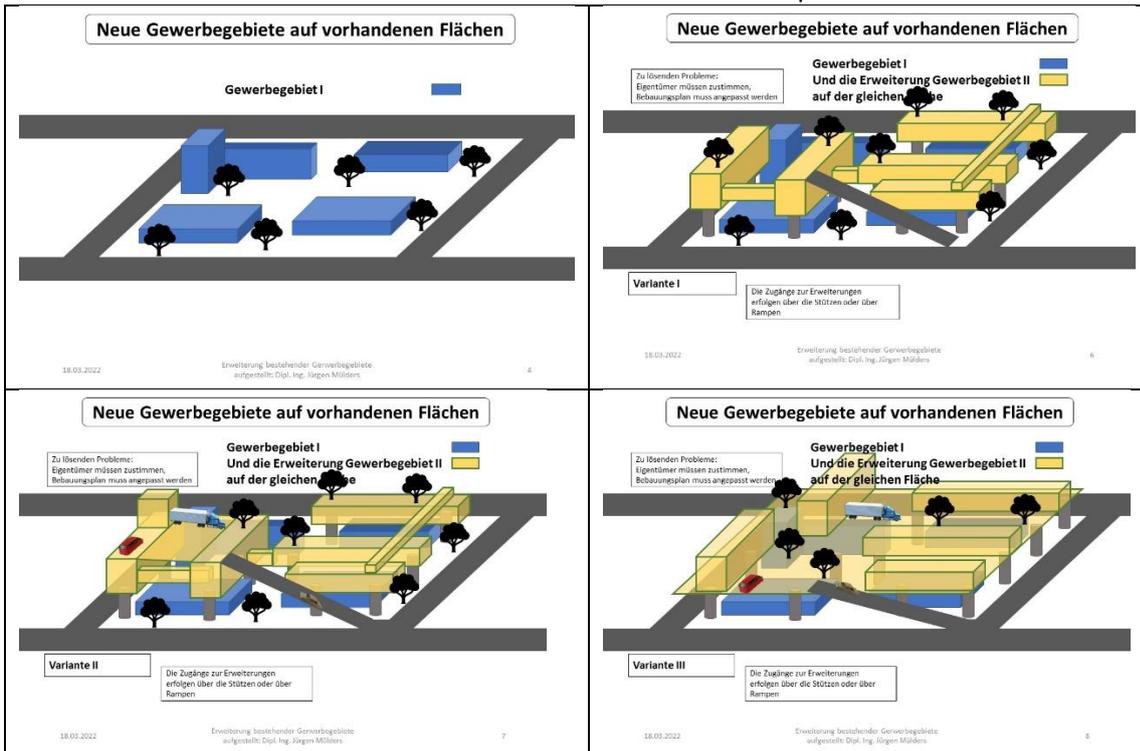
Here is a picture from Stuttgart:

A huge multi-storey car park above the 6-lane motorway. It could also be a factory hall.



[STUTTGART, GERMANY - APRIL 22, 2017: Huge Bosch in Stuttgart Airport Parking Garage letters. Bosch is a German multinational engineering artist and selected stock photo - Alamy](#)

Here are some sketches of how industrial estates can also be set up on the 2nd level:



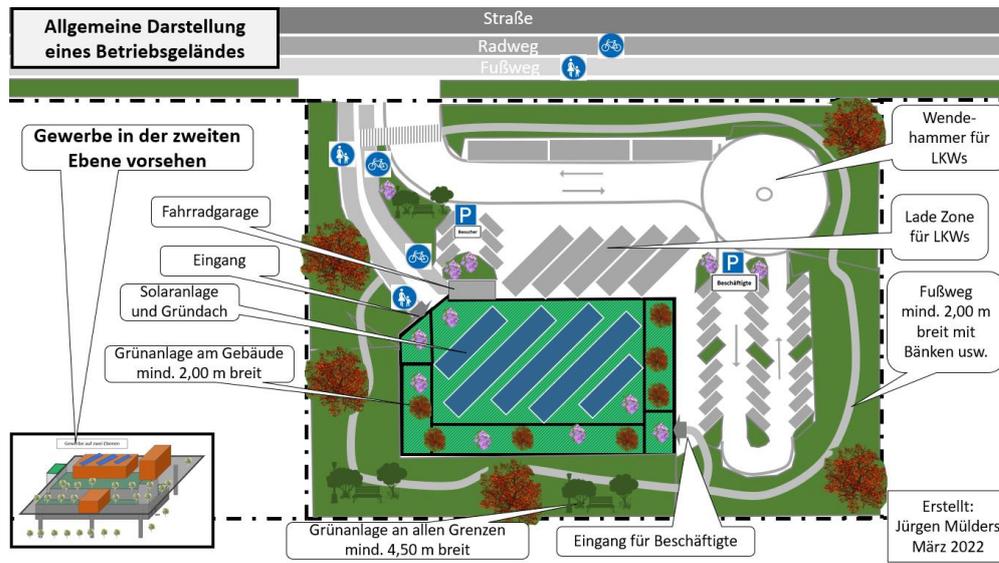
Here is a reference to truck lifts for the 2nd level:

[SERAPID - Extraordinary truck elevator in Korea - YouTube](#)

So that trucks can also be transported to the 2nd level for loading and unloading.

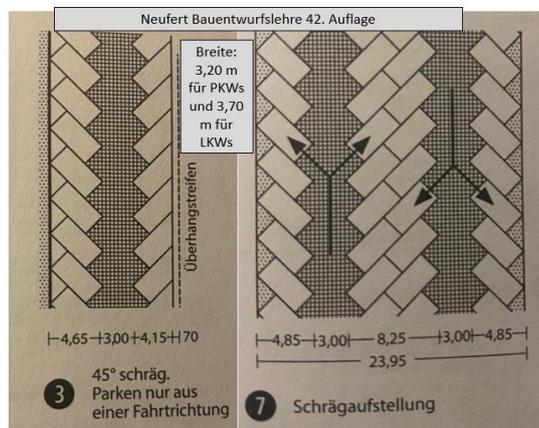
### 3.2 Sketches for a company property

An example of the use of a company site over two levels with paths, parking lots and green areas. As far as possible, eco-paving should be used.



#### 4. Requirements for parking spaces and places for deliveries

1. Delivery by trucks may only be made in 45 degree directions in order to seal less area, 90 degree orientation is not permitted,



2. Unneeded manoeuvring areas are to be doubled and expanded as planting areas, so that tree slices with a circular distance of 2.50 m from the bark are possible,
3. Parking spaces are also only to be created at 45 degrees, as point 1.,
4. Parking spaces must be created with a width of at least 3.20 m for cars and 3.70 m for trucks. (vehicle 2.10 + 1.10 width, "dooring" (according to Neufert),
5. High-rise car parks and paternoster garages should be inspected in order to seal fewer areas,
6. Rows of parking spaces begin and end with a tree slice with a diameter of at least 5.50 m, furthermore, after 4 parking spaces, a tree slice with a diameter of at least 5.50 m or width must be created,
7. Sufficient and expandable e-charging parking spaces must be set up,

8. Bicycle parking spaces must be provided for at least 70% of the employees, and the safety and weather protection of the bicycles should be guaranteed. Cargo trailers, tricycles and bicycle trailers must be taken into account,
9. Bicycle towers can be planned,
10. Bicycle parking spaces for guests and customers must be created separately from those of employees with the same requirements, according to point 10,
11. Charging points for bicycles must be provided for 70% of the parking spaces. The corresponding billing modalities must be clearly stated, if necessary multilingual,
12. Offer repair options as well as information on workshops in the vicinity.

## 5. Flood protection

As a precautionary measure against damage caused by heavy rainfall events, appropriate building precautions must be taken. In the course of the expansion, the public traffic and path areas are to be bounded laterally by edge edgings above the road surface. With regard to the building plots, all openings of the building structures, such as house entrances, cellar light shafts, stairs to the cellar and terrace accesses, must be secured accordingly, taking into account the disabled accesses.

## 6. Requirements for border fortifications

Border fortifications should first meet the safety requirements of the company. Further regulations are regulated by the municipal code.

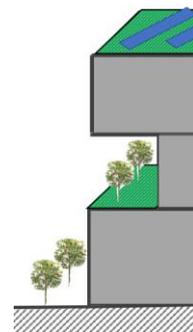
The top and bottom of the fences must not have any tips, e.g. bar mesh fences must be installed without tips.

Other sharp or pointed parts are not permitted on the fences, gates and doors.

The border fortifications are to be built in a stable manner. Privacy should be achieved with plants if possible. Hatching for small mammals such as hedgehogs should remain possible

## 7. Requirements for the buildings

1. At least 2.00 m of green spaces must be created around buildings, which also support a green façade, with the exception of delivery points. It is necessary to take into account the maintenance of the facades,
2. Buildings from a height of approx. 10 m receive a circumferential plantable balcony or a recess of at least 2.50 m depth including an irrigation system, plantable with shrubs up to 2.00 m in size and sufficient natural lighting,
3. the roof areas are to be equipped with solar systems in accordance with the respective LBauO, according to the B-Plan, the remaining areas or areas that cannot be used for solar systems are to be laid out as green areas, with shrubs up to 2.00 m high and permanently maintained, irrigation must be proven,



4. with special consideration of the architecture, suitable, especially large-scale outer walls of buildings, are to be greened with tall, perennial climbing plants,
5. All waste bins and communal waste facilities installed outside buildings must be permanently greened by means of a privacy screen in the form of a pergola or climbing construction using climbing and/or climbing plants.



Foto: PATRICK BINGHAM-HALL/Woha

## 8. Requirements for footpaths and cycle paths within the company premises

1. Barrier-free footpaths separated from motorised traffic must be created and marked from the entrance to the street to the building entrances,
2. Cycle paths separated from motorised traffic, including for cargo bikes and tricycles, must be continuously marked from the road to the bicycle parking spaces or delivery points, including pictograms,
3. Footpaths and cycle paths from the car parks to the building entrance must be marked separately and continuously,
4. Crossings or intersections between motorised traffic and footpaths and cycle paths must always be designed as zebra crossings with a width of at least 2.50 m.