



How to ensure proper drainage for a long lifetime?

ACO DRAIN® Deckline. Especially designed for parkdecks.



What are the key factors of proper parkdeck drainage?

Areas such as parkdecks are usually a part of different types of buildings, e.g. shopping centers, offices, public facilities or residential buildings.

Multilevel parking areas come with specific characteristics and specific requirements due to their construction, such as:

- **Water tightness:** water from leaking drainage systems can seriously damage the building structure. Only 100% water tight systems are suitable for parking buildings.
- **Installation height:** Shallow slab constructions require drainage systems with a minimum installation height.
- **Dynamic forces:** Turning or accelerating wheels and a high traffic frequency cause immense dynamic forces. Load classes up to C250 and long-term liability tests prove a long lasting usage.
- **Aggressive conditions:** Emulsions of water with dirt, oil and de-icing salt require resistant materials to avoid corrosion or early wearing.

What influences the lifetime of drainage in parkdecks?

Water in parking buildings usually comes from dripping water and melting snow from cars. The incidental amount depends on frequency, season and length of the driveway and can only get estimated. The drainage system needs to collect this water which can be contaminated with petrol, oil, and – most important – de-icing salt. Unlike outside, where rain can sweep away these salts, inside the building it remains in the drainage channel after water evaporates.

To prevent early corrosion, ACO DRAIN® Deckline channels are made from only highly resistant materials such as polymer concrete or stainless steel. Suitable gratings are made from composite plastics, stainless steel or cast iron.

For a long lifetime of building and drainage channels, ACO strongly recommends to use exclusively run-off drainage systems in combination with grated channels for easy maintenance and cleaning in parking facilities.





Which characteristic areas need special focus in parking buildings?

■ Roof deck:

Additionally to the special requirements for parkdecks stated before, channels on roof decks have to be hydraulically designed to drain all rain just like outside of the building. The connection to the adjoining surface has to be suitable for high temperatures of sunshine as well as temperatures below zero.

■ Middle decks:

Additional rain water has to be calculated with, when parking buildings have open facades and channels are installed next to them. Main requirements for drainage channels on middle decks are very shallow installation height and easy connection to the adjoining surface e.g. resin coating. Depending on the sealing layer, a penetration element can be installed and easily connected to the sealing.

■ Entrance level:

As vehicles loose dirt, aggressive fluid emulsions and residues like de-icing salt especially on the very first meters in the building, entrance levels need particular attention when it comes to regular cleaning and maintenance.

■ Lowermost level:

Often only little attention is paid to the lower and lowermost levels of parking buildings. Drainage channels on these levels often get less water, nevertheless it is important to clean and maintain the channels on a regular basis. Dirt and residues of de-icing salt have to be removed just like on any other level to ensure a long lifetime.

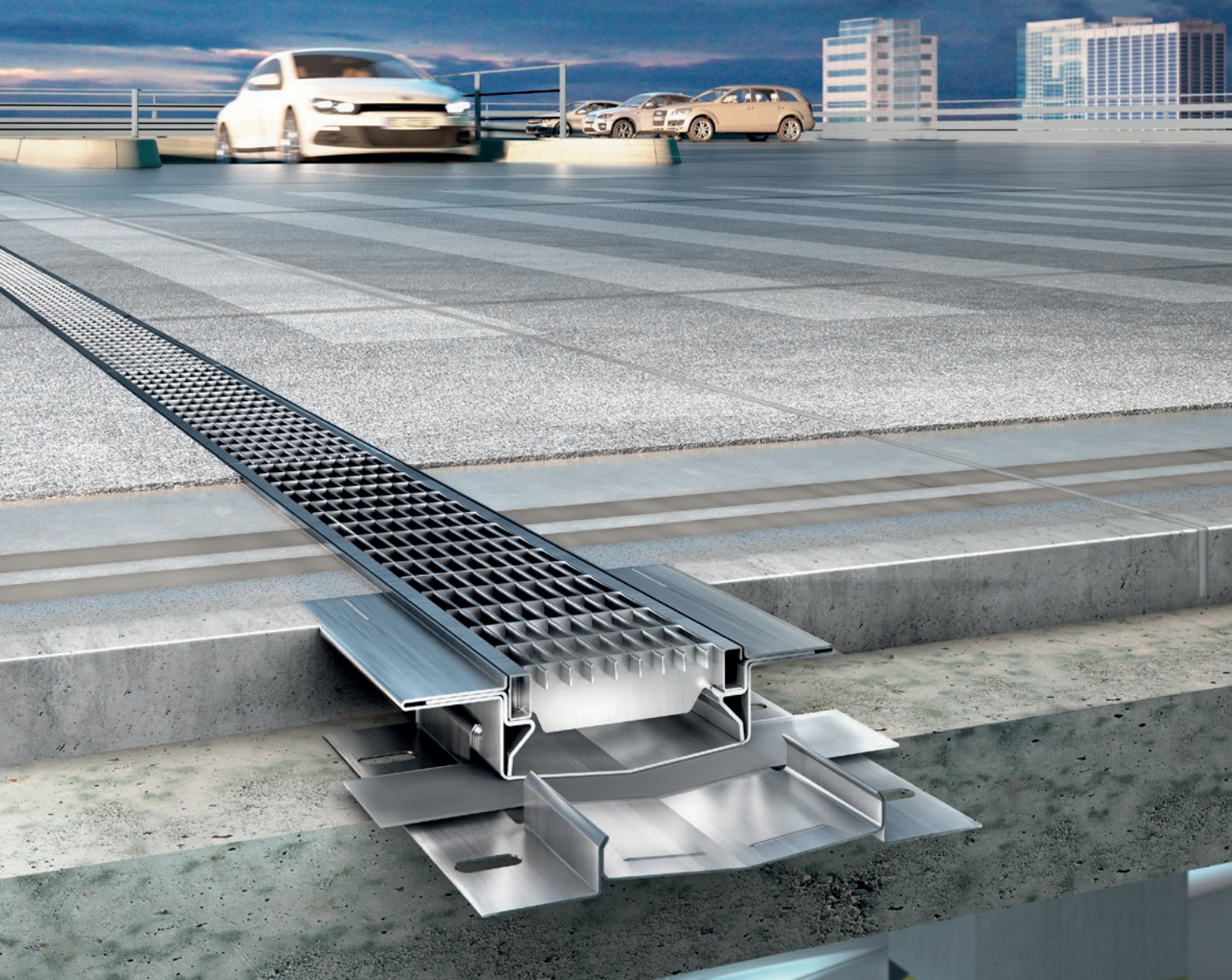
■ Ramps:

These areas represent the entrance and exit of parking buildings. A high frequency of vehicles, heavy duty traffic and highest dynamic forces occurring are the special characteristics of such sections. Moreover, in most cases ramps are sloped, which increases the speed of water flowing down. ACO recommends to use channels with a minimum width of 150 mm and the usage of gratings with an optimal water intake geometry (e.g. mesh grating) to avoid overshooting water.

Which local regulations apply in Austria?

Basic requirements like minimum slope, sealing and surface layers, suitability of materials, design of gullies and channels and other components of the sewage system like sumps, separators and lifting pumps are defined in regulations such as:

- RVS 03.07.33: „Technische Garagenausstattung“
- ÖBV RL: „Befahrte Verkehrsflächen in Garagen und Parkdecks“
- OIB RL 2.2: „Brandschutz bei Garagen, überdachten Stellplätzen und Parkdecks“
- and others



**Are you searching for drainage to be installed
in a resin coated concrete?**



Channel with flange, stainless steel

ACO DRAIN® Deckline S with coating-flange

- Integrated flange for firm and durable connection with resin coating layers.
- Watertight connection system with 3M sealing tape. No welding. No screwing.
- Quick and easy installation process through simple connector system.
- Material: Stainless steel V2A.
- High load class performance up to C250.
- Recommended solution for resin coated surfaces. Others equally possible.

How do you wish to underline the distinctive surface look?

Choose from numerous possibilities of grating designs and materials (stainless steel, composite plastic, cast iron).

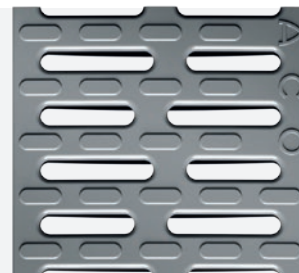
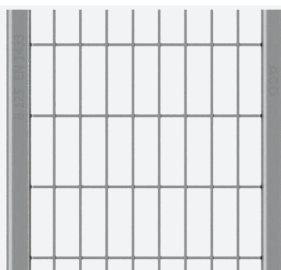
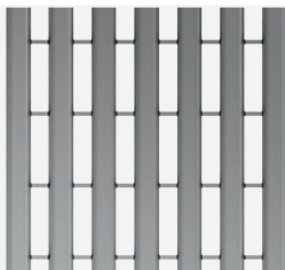


**Are you searching for drainage to be installed
in a traditional concrete?**

Channel without flange, stainless steel

ACO DRAIN® Deckline S

- Compatible with penetration element to connect sealing layer underneath the channels.
- Watertight connection system with 3M sealing tape. No welding. No screwing.
- Quick and easy installation process through simple connector system. Optional "hanging" installation.
- Material: Stainless steel V2A.
- High load class performance up to C250.
- Flexible: Recommended solution for concrete or screed flooring. Others equally possible.



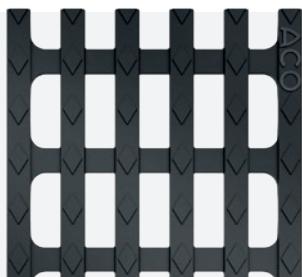


**Are you searching for drainage to be installed
in asphalt?**

Channel made of polymer concrete

ACO DRAIN® Deckline P

- Robust type-I tested channel in three color options (natural, grey, anthracite).
- Watertight polymer concrete channel, easy to seal.
- Quick and easy installation process.
- Material: Polymer concrete.
- High load class performance up to C250.
- Recommended solution for asphalt surfaces. Others equally possible.



Water Management in and around parking facilities

Drainage systems in parkdecks collect water with hazardous fluids like oil substances and salt or solid materials (e.g. sand). This water needs to be removed effectively, otherwise it may cause potential threats to the building structure.

Collected and transported liquids must be properly treated. ACO offers a range of dedicated highly

efficient oil separators (one level requires usually NS 1 l/s) designed to fulfill the functional requirements of the project (small device inside the building).

As oil separators normally are located in the lowest part of the building, it is necessary to use pumping stations. Afterwards, the water can be infiltrated

or discharged to the local sewage system. ACO provides the comprehensive offer in advising and applying the full range of devices used for Water Management in and around parking facilities.



ACO Coalisator P
oil separator

ACO Multi Star
pump station

ACO Stormbrixx
attenuation system

ACO Stormbrixx
infiltration system

ACO QBrake
flow control



The ACO service chain



train

train:

Information and further education



design

design:

Planning and optimisation



support

support:

Construction advice and assistance

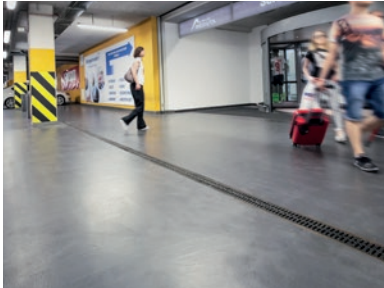


care

care:

Inspection and servicing

References



Shopping center Reduta, Warszawa, Poland

ACO Drain® Multiline



European Solidarity Centre, Gdańsk, Poland

ACO Drain® Multiline



Underground parking at Centrum Spotkania Kultur, Lublin, Poland

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