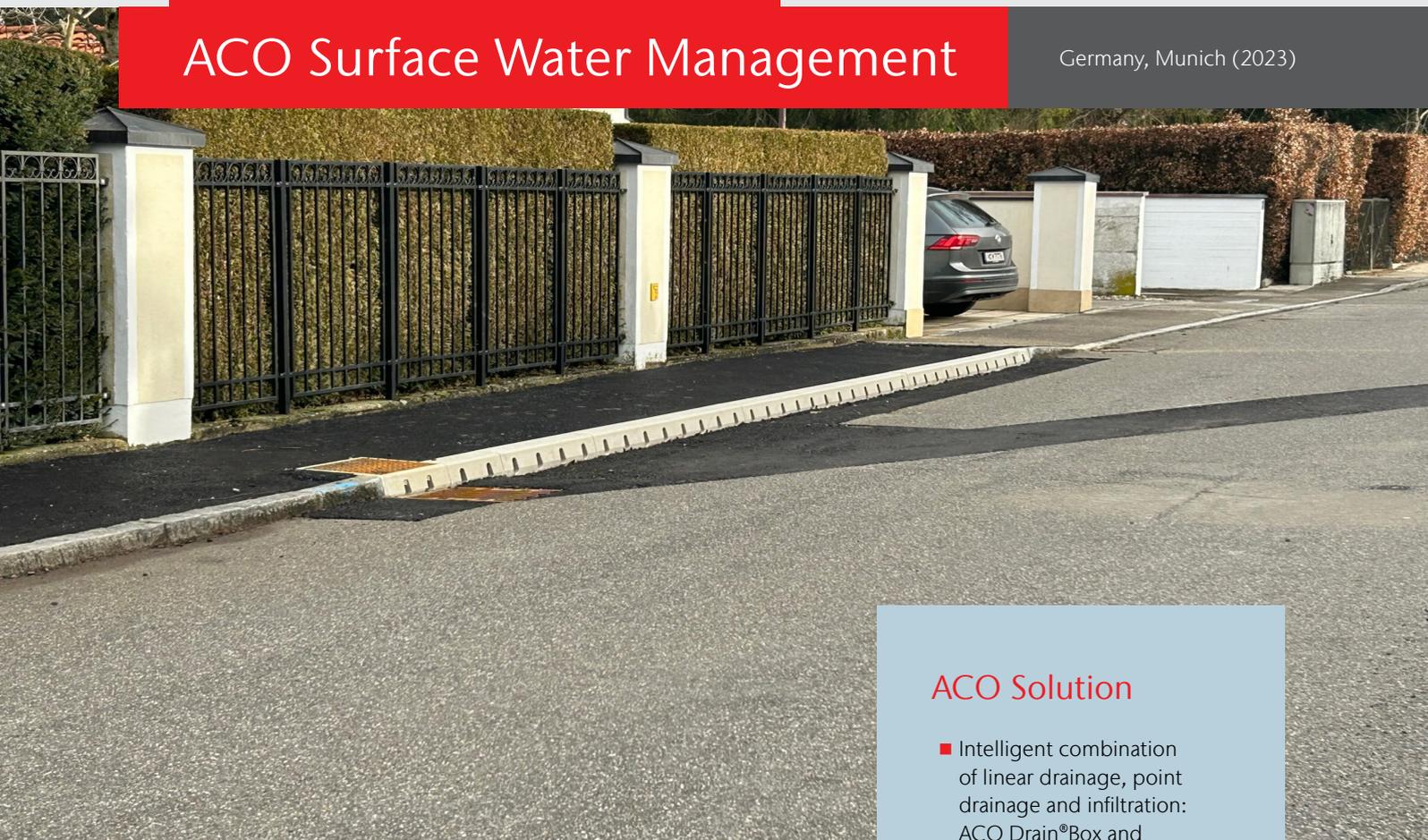


Practical experience: ACO Surface Water Management

Germany, Munich (2023)



Prevent flooding in traffic infrastructure Climate-adapted road drainage

ACO Solution

- Intelligent combination of linear drainage, point drainage and infiltration: ACO Drain®Box and ACO Stormbrixx to prevent flooding in dangerous flooding hotspots

With the help of an intelligent combination of two-way drainage and an infiltration system, a Bavarian municipality can mitigate existing flood spots and better cope with the consequences of climate change in the future.

Straßlach-Dingharting is a good place to live, located between the Isar floodplains and Lake Starnberg in the middle of extensive forests and green spaces, and at the same time only 16 kilometers from Munich.

From the highest point in the community, a panoramic view extends all the way to Zugspitze. But even this picturebook landscape is not immune to climate change. Since the middle of the last century, the average annual temperature in the region has increased by two degrees, according to the Bavarian State Office for the Environment.

As temperatures rise, the number of hot days and the amount of heavy rainfall has also increased. The warmer the air, the more water vapour is absorbed and the more intense the precipitation.



Drainage solutions along the ACO system chain



Heavy rain on Hugo-Hoffmann-Strasse before reconstruction

In the middle of the idyll: a flooding hotspot

The community of Straßlach-Dingharting is also familiar with the problem. Flooding occurs time and again, especially at critical points like Hugo-Hofmann-Strasse, which runs right through the town. When it rains heavily or continuously, water backs up at the low point of a long road depression. The existing drains and soakaways are not designed for the increasing amounts of precipitation and the mud and debris that obstructs the runoff. Due to the high flow velocity the existing road drains are overloaded. As a result, the road, adjacent properties, garages and cellars are flooded.

Visit of IFAT 2022 provided the impetus for a solution

The municipality saw the need for action and offered the prospect of a quick remedy. But what structural measures are suitable for permanently defusing the critical flooding points and quickly diverting the rainwater away from the traffic area? Additional point drains and larger inlet cross-sections alone are not enough. The decisive impetus was given to the municipality at IFAT, the world's leading trade fair for water, sewage, waste and raw materials management in Munich. At the event, ACO, a company specialised in stormwater management and water pollution control, presented an innovative combination of point and line drainage, the ACO Drain®Box. This technology, in combination with an infiltration system, provided the solution the customer was looking for, both in terms of functionality and cost.



Large amounts of water flood the road after a heavy rainfall

Effective two-way drainage

As part of the ACO WaterCycle, the Drain®Box is specifically tailored to the changing rainfall patterns and increasing flooding hotspots in urban areas. The system combines the ACO KerbDrain channel with the ACO Combipoint PP road gully. Together these utilize the advantages of both solutions - point and linear drainage. A large part of the surface water is already absorbed upstream of the road gully via the lateral inlet openings of the Kerb drain, which also functions as a curb. This reduces the amount of absorption that subsequently flows to the road gully. Both components are connected via an inlet box. The two-way drainage effect significantly increases hydraulic performance, allowing up to 25 percent more water to be discharged in a controlled manner. The system can be individually adapted to site-specific situations and local rainfall intensities.

Drainage solutions along the ACO system chain



Building in existing structures, an excavation pit with the first layer of ACO Stormbrixx basic elements



Excavation pit with a civil engineering formwork, due to its modularity the infiltration tank can be easily installed

A valuable component

The ACO Drain®Box is suitable for retrofitting and reconstruction as well as for new construction. Existing pipework system or soakaways can be integrated without problems. The system also does not need to be installed along the entire road; in many cases, a few meters are enough to avoid the risk of flooding.

As a contribution to climate-adapted road drainage, the Drain®Box received two awards last year: the InfraTech Innovation Award and the GaLaBau Innovation Medal.

Officials in Straßlach-Dingharting were impressed with the concept and decided to install two ACO Drain®Boxes, each in conjunction with an ACO Stormbrixx infiltration system. The modular infiltration system with a total retention volume of 40 cubic metres keeps the collected water in the ground.

The rainwater is retained in the soil and released into a metre-thick gravel layer in a controlled manner, thus supporting the natural water cycle. The installation was carried out in November 2022 by the construction company Swietelsky and its Ebersberg branch near Munich.



Sump unit of the KerbDrain channel in combination with the Combipoint road gully

Responsible heavy rainfall prevention

Site manager Hannes Kratzer installed the system for the first time: "Since we were working in existing structures, we were skeptical whether the combi-system with an infiltration tank could be integrated into the existing infrastructure without any problems." But against all reservations, the installation of the DrainBoxes succeeded without any problems.

In order to place the infiltration tank, the excavation pit had to be dug with a civil engineering formwork – not an easy task in view of the confined space and a large number of gas, water and communication lines. The ACO Stormbrixx infiltration tank was then effortlessly inserted into the tight steel framework - thanks to its lightweight and modularity.

"It helped us a lot that ACO was directly on site to give us advice and support. Because every delay in construction costs money," says Hannes Kratzer. With the second infiltration tank, construction proceeded like clockwork. The existing soakaways were also integrated, which filter out leaves and sediment even before infiltration. The result was an all-in-one solution that intercepts hydraulic peaks and contributes to heavy rain and flood prevention in a responsible way for the Straßlach-Dingharting community.

Drainage solutions along the ACO system chain



Installation of the ACO Drain®Box



ACO Kerbdrain channel includes two functions - linear drainage and curb - in one component

The ACO WaterCycle

Drain precipitation quickly from the surface, even during heavy rainfall, store it temporarily and release it to the subsoil in a controlled manner: that is the task of the ACO Drain®Box in conjunction with the ACO Stormbrixx. The products are integral components of the ACO WaterCycle. With the system chain, the company maps the natural water cycle and uses its products to address four central functions: collect, clean, hold and reuse. Depending on the application, the individual modules can be flexibly combined with each other. In this way, ACO contributes to the preservation of clean groundwater as a vital resource and, at the same time, makes a contribution to the achievement of the UN Sustainable Development Goals (SDGs). In SDG 6, the United Nations has set itself the task of ensuring the availability and sustainable management of water for all.

Information at a glance

Which products were used / installed:

- ACO Drain®Box
- ACO Stormbrixx

Who took care of the project:

- ACO GmbH Germany

Which ACO department provided technical service:

- ACO GmbH Germany

Architect / Planner: S-A-K Ingenieuregesellschaft mbH, Traunstein, Germany

Contractor: Swietelsky, Ebersberg branch

Year of construction: 2023

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