



Sufers (Canton of Graubünden, Switzerland) Crestawald bridge

MAPEI SOLUTIONS TO REPAIR AN IMPORTANT STRUCTURE
IN THE HISTORY OF THE SWISS CONSTRUCTION INDUSTRY

Crestawald Bridge is an arched structure built in 1959 that passes over the River Rhine in Sufers, in the Canton of Graubünden (Switzerland), and carries two lanes of the A13 motorway. 124 m long with a span of 71.5 m, it was designed by Christian Menn, a renowned Swiss engineer who, after completing this work, decided to specialise in the construction of bridges: another reason why Crestawald Bridge represents a milestone in the history of Swiss infrastructures.

Because of the intense levels of traffic in the last few years, the stretch of motorway running south from the Sufers interchange to the entrance of the Traversa tunnel had been damaged and refurbishment work needed to be carried out. Also, the tunnel had undergone temporary strengthening work in recent years: it had reached the point where it needed to be completely requalified so that it could be properly repaired, strengthened and extended. This work was carried out in 2020-2021 while maintaining the bridge's identity and aesthetic appeal.

Repair work

The badly deteriorated sections of concrete were removed up to the level of the arch and then repaired. To avoid having to interrupt the flow of traffic while work was being carried out, a temporary two-lane bridge running parallel to the Crestawald Bridge was erected.

Using special instruments, the sections of deteriorated concrete damaged by sulphates were identified and repaired down to a depth of 1 cm (1st layer), while the areas with corroded reinforcing rods had to be repaired as far down as below the second layer. To prevent compromising the static properties of the bridge, work was carried out in several stages.

The reinforcing rods were cleaned by hydro-blasting without damaging it and then protected with a layer of MAPEFER 1K cementitious mortar, a product especially developed to prevent corrosion in reinforcing rods.

To remove the concrete from the surface of the arches, on the other hand, a special hydro-demolition machine was



ABOVE. The Crestawald bridge is an arched structure built in 1959 that was lately refurbished.

RIGHT. Several areas of deteriorated concrete were repaired with MAPEGROUT THIXOTROPIC, after protecting the reinforcing rods with MAPEFER 1K.

used, which was deployed for the first time in Switzerland on this site, consisting of special devices with wheels and mechanical "arms" and "legs".

One of the most difficult challenges with this project was the repair works on the areas of deteriorated concrete on the intrados of the bridge. The challenge, won thanks to MAPEGROUT THIXOTROPIC, was to restore the appearance and texture of the concrete originally created using special formworks. Its thixotropic consistency made it easier to apply the product on the underside of the arch.

The intense teamwork between all the stakeholders has enabled this structure, a milestone in the history of the Swiss construction history, to be restored to its original splendour.



Find out more
MAPEFER 1K

TECHNICAL DATA

Crestawald bridge, Sufers (Graubünden, Switzerland)

Year of construction: 1959

Design: Christian Menn

Period of repair works: 2020–2021

Owner: Swiss authority for roads (ASTRA/OFROU)

Design: Casutt Wyrsch Zwicky AG

Main contractor: Erni Bau AG

Hydrodemolition: Hydrojet AG

Mapei coordinator: Roger Mohler, Mapei Suisse

MAPEI PRODUCTS

Protecting reinforcement

rods: Mapefer 1K

Concrete repair:

Mapegrout Thixotropic

For further info on products: mapei.com, mapei.ch