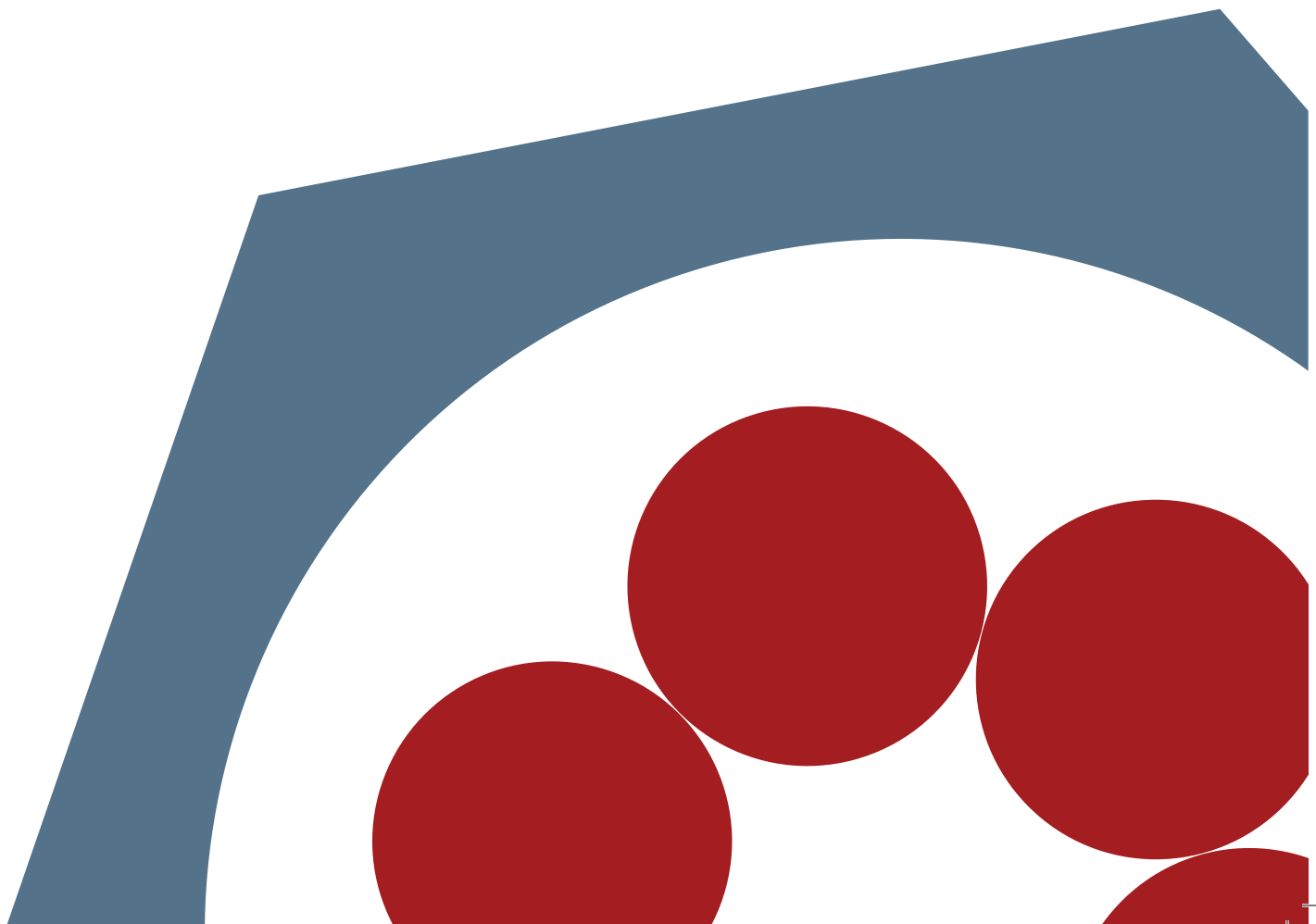




Senseviadukt

Viaduct repair with rapid-hardening concrete Concretum® Q-FLASH 5/20



Senseviadukt - Viaduct over River Sense

Project overview

1130 m³ of Concretum® Q-FLASH 5/20

7 days for execution of entire concrete works

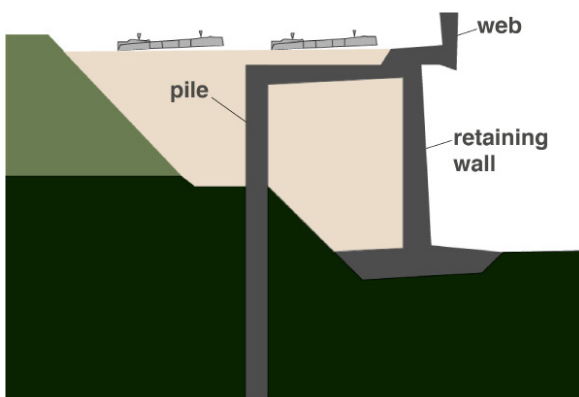
24 hours operation - continuously

80 metres maximum pumping distance

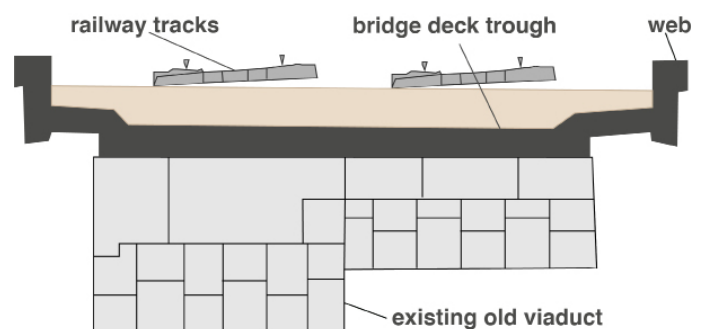


The 95 year old SBB railway viaduct over the river Sense, connecting the two cities Bern and Fribourg, needed to be fully overhauled. By using Concretum® Q-FLASH 5/20 rapid-hardening concrete, the extensive concrete work was completed in just seven days and therefore the disruption of the railway line was reduced significantly.

Cross section abutment east



Cross section bridge deck



Structures cast with Concretum® Q-FLASH 5/20: bridge trough, webs, retaining wall and piles

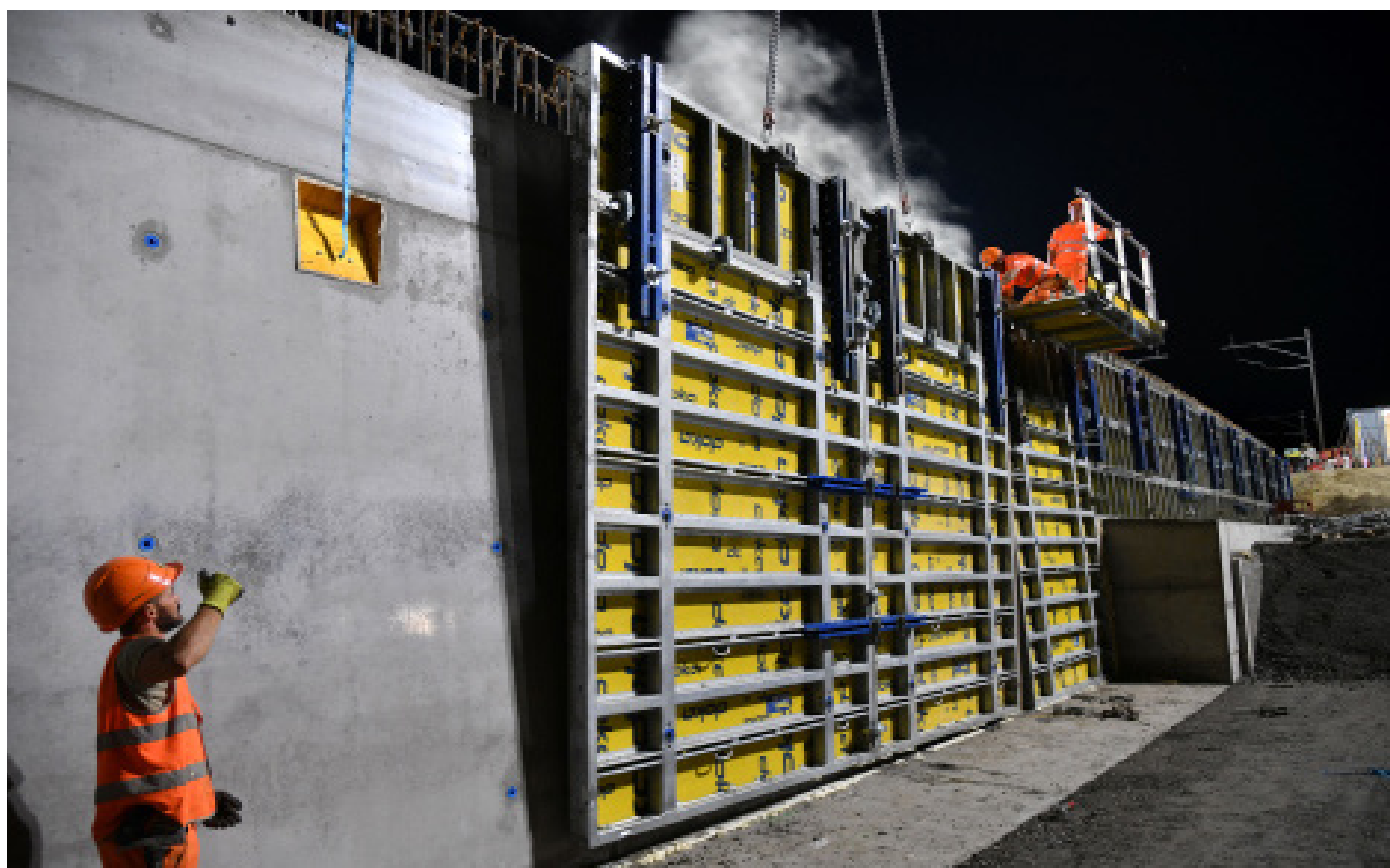
For the reconstruction of the bridge, the SBB shut down the line for 21 days. In order to carry out the complex construction work in the designated time frame, large quantities of Concretum® Q-FLASH 5/20 rapid-hardening concrete were used 24 hours around the clock.



The piles (25 m³) are already in use while the retaining wall is prepared for the concrete pour



Continuous pouring of 570 m³ for the bridge deck trough and webs



Retaining wall: stripping of formwork 6 h after casting

Due to the rapid strength development of the Concretum® Q-FLASH 5/20 concrete, it was possible to tackle the work steps in shorter periods of time. For example, the formwork for the new retaining wall was stripped only 6 hours after the start of the pour.

The bridge deck trough, including the webs, were cast in one pour of 570 m³. The concrete was delivered in two different consistencies and consequently could be pumped as well as skipped with the help of a crane. Due to the tight delivery schedule, two batch plants were used simultaneously for the concrete production. This required very thorough logistical coordination. Therefore, each batch plant produced concrete according to a designated mix design for each specific structure, namely bridge deck trough including webs, retaining wall and piles.



<https://youtu.be/YaZhVVx9e4E>



Pump mix used on bridge trough

Concrete specification

Product	Concretum® Q-FLASH 5/20
Exposure class	XC4, XD3, XF2
Strength class	C40/50
Consistency	zero slump to pumpable
Max. aggregate size	16 mm, round

Concrete properties

Open time	2-3 hours
Fresh concrete temperature	24-30 °C
Compressive strength 3 h after setting	20 N/mm ²
Compressive strength 5 h after setting	25 N/mm ²
Compressive strength at 28 days	75 N/mm ²

Joint Venture:

Walo Bertschinger AG
www.walo.ch

JPF Construction SA
www.jpf.ch



Concrete Supplier

Messerli Kieswerk AG
www.messerli-kieswerk.ch



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