

Bridge Oberriet – Switzerland

Project Description:

The tree span bridge over the river Rhein was built in 1963. It connects Switzerland and Austria. The bridge is located near Oberriet in Switzerland and Meiningen in Austria.

In 1996, the bridge had to be post-strengthened, because of higher traffic loads.



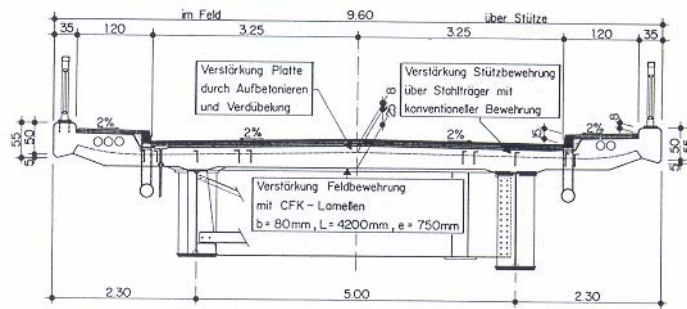
Bridge Oberriet - Meiningen, between Switzerland and Austria

Quick Facts:

- **Name and Location:** Bridge Oberriet, Switzerland and Austria
- **Owner:** Kanton St. Gallen (CH), Land Vorarlberg (A)
- **Structure category:** medium span bridge
- **Spans:** 3 spans: 35.10 / 45.00 / 35.10 m
- **Structural system:** steel-concrete composite bridge
- **Start of SHM:** 1996
- **Number of sensors installed:** 24 strain measurements
- **Instrumentation design by:** EMPA

Description of Structure:

The superstructure comprises of two steel plate girder and a in-situ concrete plate. The strengthening project in 1996 included the application of a new concrete layer on top of the plate and CFRP plates on the underside of the plate. The CFRP plates were 80 mm wide and 1.2 mm thick. They were applied lateral with a spacing of 75 cm to strengthen the transverse direction. See cross-section.



Cross-section of the bridge (from [1])

Purpose of Instrumentation:

The purpose of the instrumentation is to get experience about the long-time behavior of the new strengthening material CFRP (Carbon Fiber Reinforced Plastic) and their composite behavior together with concrete.

Sensor Details*:

Type	Number	Location
Deformeter (Length = 200 mm)	24	on CFRP plates on concrete from plates to concrete

The Deformeter measurements have been taken 1 to 4 times a year. The actual temperature and humidity have been registered during each measurement.

The principle of the Deformeter measurement:



Examples of outcomes:

Until now, the results have not been published.

Benefits of using SHM technologies in the project:

Monitoring of the long-time behavior of the “new” strengthening material. The measurements shall increase the experience and confidence in this material. Furthermore, the measurements show that the CFRP plates are still undamaged and that they are still working.

References:

- [1] Walser R., Steiner W., “Verstärkung Rheinbrücke Oberriet-Meiningen”,
Schweizer Ingenieur und Architekt Nr. 44/1996

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