

NB 73A Lehenbrücke (Switzerland)



Project description

The 81 m long Lehen Bridge built in 1969 with precast elements, is part of the A5 La Neuveville-Biel/Bienne national road in Switzerland.

Due to critical stresses in the transverse reinforcement of the bridge, mageba was commissioned by the bridge owner (ASTRA Federal Roads Office) to perform an on-site temporary monitoring including stress and fatigue analysis.

The evaluation showed that the stress values of the rebar were significantly below the failure criterion according to the local technical standards resulting in reduced strengthening works for the client.

mageba scope

The monitoring includes real-time measurements on the rebar to verify fatigue. Thus, critical locations have been identified, concrete has been locally removed to apply strain gauges on the rebar, to finally connect them to the ROBO®CONTROL monitoring box.

To calibrate the measurements, a load test with a 20 t truck was conducted.

Measurements were taken 24/7 for three months of continuous monitoring at a frequency of 100 Hz in order to get an in-depth understanding of the actual stress ranges of the rebar.

The raw data was processed and presented in a histogram showing the measured stress ranges.

Finally, the damage accumulation was calculated using the SIA standard.

Highlights & facts

mageba products:

Type: ROBO®CONTROL
Portable SHM system
Installed: 2020

Structure:

City: Tüscherz – Alfermée
Country: Switzerland
Length: 81 m
Completion: 1970
Owner: Federal Roads Office
Designer: Gruner Wepf AG, Zurich

The project is located in Tüscherz – Alfermée in Switzerland



Hydro-jetting was necessary to reveal the reinforcements of the structure



Measurement example: Original and denoised signal

