

## Sandacher Bridge

### Final coupling joint strengthened with post-tensioned CFRP plates

#### All tensioning works completed

As part of the normal maintenance work on the Sandacher overpass in Spreitenbach, the bridge was also strengthened in phases using the StressHead CarboStress® system. The fourth and final phase of the tensioning works was recently completed. This work to the final cable coupling joint was located above a main Swiss Railways traffic route, and so in order to prevent the rail operations being disrupted, the work was carried out over several night-time operations. When the last train had passed each evening, the two tracks were blocked so that a mobile scaffold could be erected across the lines; then before the arrival of the first train in the morning, this was removed so that the trains could run to timetable again. After the necessary preparatory works, the 18 StressHead CarboStress® systems were installed and tensioned in a total of just three night-time operations of only 2 hours each.



Figure 01: Mobile scaffolding structure

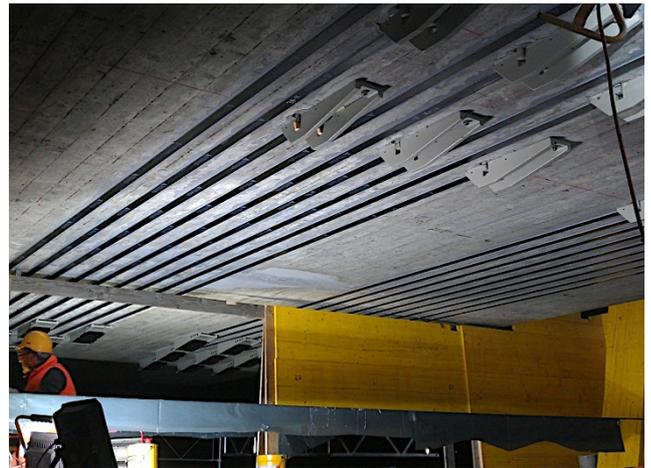


Figure 02: Tensioned StressHead CarboStress® systems

#### Background information

The Sandacher overpass bridge was originally built in 1969/70 and is a prestressed concrete structure, which forms the crossing over the N1 national highway, the Limmat Valley Marshalling Yard rail tracks, and the Dietikon-Killwangen Mainline tracks between Spreitenbach and the Althard area.

No major repair works had been carried out on the Sandacher bridge structure since its construction and routine structural surveys now revealed that - amongst other things - all four coupling joints in the main post tensioned structure were cracked. These were separate cracks each of about 1 mm maximum width.

The cracks that were present in all of the coupling joints were cleaned out and then they were compressed locally by the installation of the external post-tensioning system (tensioned CFRP plates totalling about 4,000 kN per joint). Each coupling joint was strengthened with 18 StressHead CarboStress® systems at 220 kN post-tensioning force.

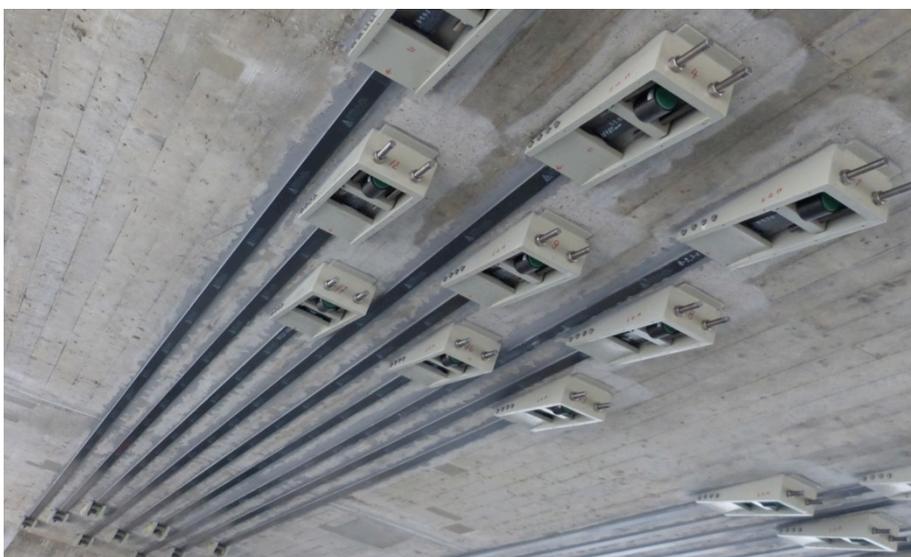


Figure 03: The StressHead CarboStress® systems successfully installed and tensioned

#### Project participants:

Client:  
Swiss Railways SBB

Project design and site supervision:  
dsp Ingenieure & Planer AG

Tensioning system & contractor:  
StressHead AG, Lucerne / SikaBau AG, Aarau

Completion:  
2014-2015, in four phases