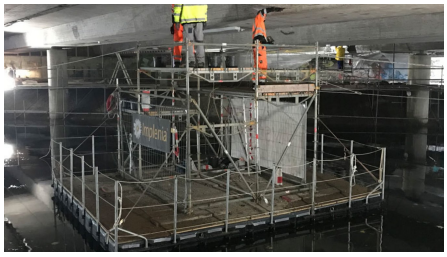
Reference

Carbon reinforcement of the Nidda bridges, A5/A648 motorways









SHORT DESCRIPTION

Reinforcement of the partial structures 01 + 02 in the course of the A648 motorway over the Nidda using carbon concrete

THE PROJECT

The bridge of the A648 motorway, consisting of three partial structures, serves to subway the Nidda river and service roads near Frankfurt-Rödelheim. Bridge inspections and calculations revealed deficiencies in terms of prestressing steel strength as well as inadequate announcement behaviour in the event of prestressing steel failure due to stress corrosion cracking. Under the technical leadership of Implenia Instandsetzung GmbH, the consortium carried out reinforcement measures of the partial structures 01 + 02 with carbon fibre/carbon mats inserted in special concrete on the upper sides of the carriageway and on the lower sides of the girders of the bridge structures. The work for this strengthening of two bridges of the federal trunk road network using carbon concrete, which was used for the first time in Germany, was executed in accordance with an approval for individual cases.

SERVICES IN DETAIL

- Shotcrete
- High-pressure water jetting
- Mastic asphalt paving by machine and by hand

CHALLENGES

- Carbon concrete used for structural reinforcement for the first time.
- Work was executed in accordance with an approval for individual cases.

SUSTAINABILITY

Reinforcement of the partial structures 01 + 02 for a remaining operating life of approx. 15 years.

FACTS

Location	An der Nidda , Frankfurt am Main , Germany
Status	completed
Construction volume (value of our services)	2.62 M EUR
Start of construction	May 2020
Completion	November 2020
Building owner	Hessen Mobil Gelnhausen
General management	Hessen Mobil Gelnhausen
Project management	Hessen Mobil Gelnhausen
Planning	Curbach Bösche Ingenieurpartner

SERVICES

Restoration

Civil engineering

Road transport infrastructure

Infrastructure