

Aqueduct under the Gouwe, Alphen aan den Rijn

Client: Directorate General for Public Works and Water Management/ NS Railinfrabeheer
Design: Directorate General for Public Works and Water Management, Building Division / Holland Consult / BAM Infraconsult
Construction: BAM Civiel bv
Contract value: € 31.000.000
Contact: (0182) 59 06 00 / info@bamciviel.nl / www.bamciviel.nl



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At Alphen aan den Rijn, the new N11 between Leiden and Bodegraven crosses a railway line, two roads and the Gouwe Canal. A rail bridge, two viaducts and an aqueduct were needed to take the road across.

The trough-shaped rail bridge was built next to the railway line. Train services were only interrupted for 52 hours, during which time the track was broken open, the tension piles were driven in ready for the aqueduct, hydraulic jacks were used to move the bridge into position on the line, and the track and overhead wires were put back again. The aqueduct, with its two sets of two-lane carriageways, consists of a closed tunnel section under the Gouwe and open concrete troughs for the entrances. To cut construction time considerably, each trough was

built next to the pump pit. A total of 1,700 piles (precast concrete piles and vibro-combi-piles) were driven for the 1,100-metre-long structure. Following wet excavation of various steel sheet piling building pits, the underwater concrete floors were poured to enable the aqueduct to be built in dry conditions. When the closed section was finished, its ends were temporarily sealed to enable it to float.

The building pit was flooded and the tunnel section was floated out and submerged in a dredged trench in the Gouwe. The open sections were built of reinforced concrete in the traditional way, with a transition to a polder structure.