

# Aqueduct under the Gouwe Canal, Alphen a/d Rijn

At Alphen aan de 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 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.

## Main Client

Directorate General for Public Works and Water Management / NS Railinfrabeheer

## Client

BAM Civiel

## Type of Contract

Design & Construct

## Completion

1998 (construction)

## Location

Alphen a/d Rijn, the Netherlands

## Construction Costs

Euro 31 mio

## Consultancy Fees

Category 5 (see page 2)

## Services

Tender Design  
Detailed Design  
Temporary Structures

## Scope

Aqueduct and approach sections and overpasses





# Aqueduct under the Gouwe

## Project Description

The aqueducts, with two two-lane carriageways, consist of a closed tunnel section under the Gouwe Canal and an open section for the entrances. A total of 1,700 piles were driven for the 1,100 metre long structure.

The underwater concrete floor slabs were poured to enable the aqueduct to be built in dry conditions. When the closed section was finished the building pit was flooded and the tunnel section was floated out and submerged in a dredged trench in the Gouwe Canal. The open section for the entrances were built of reinforced concrete in the traditional way.

The trough-shaped rail bridge was built adjacent to the railway line. Train services were only interrupted for only 52 hours. During this period the track was removed, the tension piles were driven in for the aqueduct, and hydraulic jacks were used to move the bridge into position on the line. And last but not least the track and overhead wires were put back again.

## Role DMC

Delta Marine Consultants has prepared the Tender Design and the Detailed Design for this Design&Construct contract.

**Consultancy Fees:** 1: 50.000€ 2: 50 - 150.000€ 3: 150 - 300.000€ 4: 300 - 600.000€ 5: > 600.000€



Delta Marine  
Consultants