



Strukton
Immersion Projects

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Transport and immersion of 4 tunnel elements

A73 Roertunnel - Netherlands

Project information

Client:	Combinatie Besix - Strukton
Duration:	2 years
Date of completion:	March 2007
Contract value (EUR):	€ 3.300.000,00

Description of the activities

Design, engineering, preparation and execution of floatation, transport and immersion of 4 tunnel elements. Including the assembly and removal of 9 modular steel bulkheads and diving works in all stages.

Details

Type:	Traffic tunnel with 2x2 carriage ways
Length immersed section:	588 meters
Total amount of elements:	4
Element measurements:	TE01 ~ TE02 (LxBxH) = 158 x 27,6 x 7,8m TE03 ~ TE04 (LxBxH) = 136 x 26,6 x 7,4m
Depth:	16 meters
Achieved placing tolerances:	Vertical: gravel bed, horizontal: +/- 35 mm
Foundation:	Gravelbed



Specific information

The Roertunnel consists of four tunnel elements, one crossing the river Roer and three in the floodplain of the river. The casting dock and the immersion site were linked by a temporarily excavated 600-metre sheet piled canal and the tunnel elements were constructed in two batches of two tunnel elements. The first two elements were temporary moored in a partitioned part of the cofferdam to make it possible to transport them independent of the water level of the river. The last two tunnel elements were constructed with a larger freeboard to minimize the water level dependency and were transported to the immersion location directly after floatation.

All four tunnel elements were immersed using two steel cross beams seated on the sheet pile walls of the cofferdam. Both beams were equipped with two immersion winches. After immersion the cross beams were transported to their next location using pontoons.

For realignment, triangular trussed girders were placed between cofferdam and tunnel element. For the tunnel element crossing the Roer, these girders were also used to prevent the element to get too close to the immersion trench walls thereby closing of the flow in river.

The Roertunnel was the first project in which our in house developed modular steel bulkheads were used, having the advantage of a quick mobilization and demobilization. In the past bulkheads were mostly constructed as concrete walls supported by steel columns, a time consuming construction method with which major noise and dust occurred during the removal of the bulkheads.

The tunnel was founded on a gravel bed and a dry closure joint was created so the adjacent approach could be built directly against the last tunnel element.