

Project identification

# N31 Aqueduct Harlingen

Type of project

Aqueduct



Client

Main Contractor Ballast Nedam for Province of Friesland and Municipality of Harlingen

In co-operation with

Designer Ballast Nedam Engineering, Construction by Ballast Nedam Infra; Designer of Immersion provisions MH Poly, Tenwolde marine & Transport Services; Specialist Immersion Survey by Geovisie Land&Marine

Project assignment

Transport and immersion engineering and preparations, construction engineering of immersion provisions, operational command and management of transport, immersion and sand flow operations and preparations of aqueduct and management of all its' subcontractor parties, including advisory work upon construction for civil and structural post-immersion finishing works of the aqueduct

Country

The Netherlands

Location

Harlingen, Friesland

Project duration

2013 - 2014 Design and tender phase  
2015 - 2017 Construction

Project phase

Completed

Construction cost

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Consultancy fee

€ 200.000,=  
(excl. VAT)

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Project description

The new alignment of the N31 provincial road at Harlingen, Friesland, goes around the city centre of Harlingen and crosses the Harinxma canal, parallel to the old bridge in the existing N31 road. Due to the number of recreational (sailing) vessels passing the existing moveable bridge in the N31 being the cause of usual traffic delay, the new crossing has been designed as an aqueduct under the canal.

The cross section of the aqueduct comprises two motorway tubes with 2 lanes each, with a low internal wall with columns in between. The aqueduct is suited only for motorway traffic.

Scope of work

Civil, structural and marine works:

- Transport and immersion engineering and work preparations of transport configuration, provisions and equipment for float up, transport, immersion, installation and sand flow of the aqueduct element
- Ballast plan, ballast capacity, jacking plan and sand flow calculations
- Geo-hydrological advisory of canal bottom and shore protection
- Construction methods, construction time schedules and transport and immersion time schedules
- Operational management and command of all preparations phases and transport and Immersion operations
- Advisory and provision of working/construction method and guidelines for post-immersion finishing works such as ballast exchange (in co-operation with the client)
- Advisory and supervision upon construction (in co-operation with the client)