

Project identification

# Renovation / Upgrading 1st Heinenoord Tunnel

Type of project

Renovation



Client

Rijkswaterstaat (Dutch Public Works)

In co-operation with

Covalent

Project assignment

Technical Consultancy to Owner for tunnel renovation and upgrade

Country

The Netherlands

Location

Rotterdam

Project duration

2018-ongoing

Project phase

Design phase

Construction cost

(excl. VAT)

Consultancy fee

€ 4.7 million (mid '21)  
(excl. VAT)

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Project description

The 1<sup>st</sup> Heinenoord tunnel is part of the National Motorway Network and located in the A29 Motorway, close to Rotterdam. The tunnel was built in the late sixties and has a length of 1064 m; the closed section is approx. 614m long of which 571m is immersed (5 tunnel elements). The tunnel was originally accommodated with 2 road lane and a slow traffic lane. In the nineties a second (bored) tunnel was constructed which now carries the slow traffic. The old tunnel now accommodates 2x3 road lanes in two traffic tubes (but is missing a central gallery).

The old Heinenoord tunnel is currently being prepared for a substantial renovation and upgrading in order to meet current legislation. Next to upgrading systems and installations, a central gallery will be realized for escape and installations. It will be the first tunnel in a substantial renovation program of tunnels in the national road network in the province of South Holland. The renovation works for the 1<sup>st</sup> Heinenoord tunnel are scheduled for 2021-2023.

One of the challenges of the project is that the local road network is very congested and deviation routes are not available. One of the focus areas of the project is the limitation of disruption to the traffic and to keep the tunnel as much as possible available. Long closures of the tunnel are therefore not allowed, which has a significant impact on the planning of the renovation works:

- 2 x 2 weeks full closure of the tunnel (to construct central gallery and transfer from existing systems to new systems)
- 30 weekend single tube closures and 30 night single tube closures
- 2 weekends full closure
- Public transport (buses) will use the adjacent slow traffic tunnel during the closures

Scope of work

TEC is involved in this pilot renovation project as the Client Consultant and working in an integrated Project Organization with the Owner:

- Technical MEP related designs
  - All tunnel installations and systems
  - Standardization strategies for command, control, communication and safety / security systems
- Technical Civil Designs
  - Implementation of additional inner wall to create central gallery (structural and construction staging)
  - Inspection and assessment of joints
  - New Code compliance (EU-code especially regarding shear capacity)
  - Small items (fire proofing materials, barriers etc)
- Interface and stakeholder management
  - Communication with internal and external stakeholders.
  - Identification of requests / requirements of internal stakeholders (Public Works departments including operators) and external stakeholders (municipalities, water boards etc.)
  - Evaluation of all requests and translate accepted ones to smart technical and contract requirements
  - Manage interfaces between various inter-related activities and various disciplines and translate to smart technical and contract requirements
  - Development of SE-based system (Relatics) in which all requirements are listed and managed

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- Contract management
  - Assist the Client preparing contract documents, based on NEC4 contract principles (Alliance) for the execution of the renovation works.
  - Preparation of technical specs
  - Tender assistance (currently ongoing).
- BIM / Digital Tunnel Twin
- Preparation of 3D BIM models (based on 3D scans and as-built documentation) and development of Digital Tunnel Twins for the commissioning and testing phase and for the future operation and management of the tunnel

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