Project Sheet

Delta Marine Consultants
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Delta Marine Consultants is a trade name of BAM Infraconsult bv

Sluiskiltunnel

The Province of Zeeland, the Netherlands is owner of the 1.5 km long, Sluiskiltunnel, located in the N62 highway, crossing the shipping channel between Terneuzen (the Netherlands) and Gent (Belgium).

The tunnel is part of a project covering a 6 km long stretch of the N62. It consists of a twin bored tunnel with each 2 lanes, with an control building above the western entrance, and connecting road network.

As in-house BAM designer, Delta Marine Consultants was responsible for the overall design, managing and integrating the design for all project disciplines (incl. those by its Sister company Wayss & Freytag Technical Department who has performed design activities for tunnel lining and associated works).

Main client
CBV KKS (Kanaal Kruising Sluiskil)

Client
Bouwcombinatie BAM-TBI

Type of contract
Design, Construct and Maintenance

Completion
2015

Location
N62, between Terneuzen, the Netherlands and Gent, Belgium

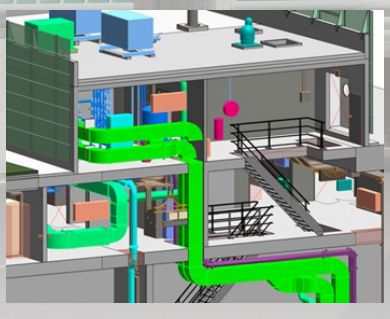
Construction costs
Euro 217 mio

Consultancy Fees
Category 5 (see page 2)

Services
Integral Design Coordination
Tender Design
Basic Design
Detailed Design
Construction Support
As built

Delta Marine Consultants

Sluiskiltunnel



Scope of Work

The 2*2 lane road tunnel consists of 2 tubes of 1140 m bored length (crossing 3 rail lines and a busy shipping channel), connected to short in-situ tunnels and tunnel approached (including a tunnel portal with integrated building at the west side).

Besides the tunnels and cross-passages, the design scope covered temporary works, road works, fly-overs, architectural (buildings and portals), M&E and software required for safe tunnel operation.

The tunnel has been fitted-out with the state-of-the art equipment and the Contractor has included 10 years maintenance in its scope.

Challenges

The main technical challenge has been to deal with the geotechnical (soft soil and highly variable) conditions. Based on DMC's extensive experience in designing for soft soil conditions, project specific and economic solutions have been developed for pile design and settlement control.

Main organizational and integration challenge has been the design and integration of M&E&C-systems:
The 54 different mechanical and electrical systems and related equipment for tunnels have been subject to continuous development due to the new available technical solutions and developing owners- and stakeholder requirements. Surprises during the installation were however avoided by successfully integrating the M&E discipline with the Civil and Tunnel disciplines and maintain intensive coordination with all stakeholders, from the start of the project.

Time saving

Since DMC was involved in the project from the tender stage on, the successful integration of design and construction became possible, for example by designing solutions that allowed M&E fit out of one tunnel tube, while construction activities in the other one where still ongoing.
Another good example is that for the first time for application in road tunnels, the fireproofing was successfully achieved by an integrated solution (fireproofing in the concrete segments of the bored tunnel), saving valuable time for tunnel fit-out.

Integration

DMC has successfully coordinated the multi-disciplinary integrated (of largely self-performed) designs of all disciplines involved. As a result all safety- and other commissioning tests were successfully passed, and the project was opened in time and to full satisfaction of the Client.

Clever Solutions

Several technical improvements were developed, to reduce risks (like measures to uncouple the interaction between expanding clay layer and tension piles), to reduce CO2 (by using in house developed LEAB asphalt), to avoid delays (by creating and managing an overall BIM-model the 3D integration of civil-, electrical- and mechanical designs was achieved, with as a result minimal clashes and delays during construction and installation) and to improve user comfort for the motorists (by integrating special anti-sun screens at the tunnel portals).

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

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