

# Connection ramp near Vintappersøen

Motorway loop north of Copenhagen



**AARSLEFF**

In 2011, Aarsleff entered into a partnering agreement with the Danish Road Directorate for the establishment of a 700-metre-long ramp connecting the Elsinore Motorway with Motorway Ring 3 via the bypass road in Lyngby north of Copenhagen. Until now, the motorists have driven through the roundabout near the lake Vintappersøen and two traffic lights which have caused congestion during rush hours all the way to the Elsinore Motorway. The new connection ramp will provide easy and fast connection between the Elsinore Motorway and Motorway Ring 3.

## **Involvement already in the planning phase**

Specifically for this contract, Aarsleff was involved in the project design already before the expropriation. Through a close working relationship with the Danish Road Directorate and associated consultants, we were able to complete the design of the ramp connection. The composition of the contract meant that all parties contributed different expertise. This reduced project risks and made the selection of the most appropriate solutions easier. Our close collaboration resulted in several improvements to the design, in terms of both price and time. As an example, we changed a planned bridge to a sheet pile embankment.

## **Construction of loop ramp**

The loop ramp was constructed in very confined spaces, as the ramp neighbours a residential area and encircles the recycling station of Gentofte Municipality. In addition to the

ramp, we put up crash fences, carried out asphalt work, signposting and illumination of the ramp.

The shaping of the ramp was carried out by installing 6,200 square metres of sheet piles anchored by means of 320 permanent anchors. In some areas, it was impossible to use ground anchors out of consideration to the surrounding buildings. Instead, we installed a combined wall which is a particularly strong wall consisting of H-piles and sheet piles. In some areas, the soil bearing capacity was insufficient, so we installed a pile slab to avoid replacing the soil which was partially contaminated.

Subsequently, we cast approx. 3,200 square metres of single-sided concrete walls on top of the installed sheet piles and executed three minor bridges. On top of the sheet pile wall, we carried out a capping beam and then we installed bridge crash barriers and noise barriers.

## **Ahead of schedule**

According to the original plan, the ramp was to be completed in October 2012, but our involvement in the planning phase combined with the successful working relationship in the execution phase meant that Vintapperrampen was opened up for traffic three months ahead of schedule by the Danish Road Directorate.



#### Data

- Earthwork, drains, gravel work, asphalt work, bridge crash barriers, paving work and road marking work on approx. 700 metres of ramp
- Demolition of existing building of approx. 425 m<sup>2</sup>
- Clearing and milling of pavement for the new structure
- Construction of 3 minor concrete bridges
- Construction of ramp, approx. 60 metres as a sheet pile embankment and approx. 200 metres in an excavation with sheet piles,

- a total of 6,200 m<sup>2</sup> of sheet piles, 900 m<sup>2</sup> of combined wall and 320 ground anchors
- Establishment of a piled embankment consisting of 94 piles with concrete pile caps
- Establishment of new road lighting system
- Establishment of noise shielding
- Casting of 3,200 m<sup>2</sup> of sheet pile walls, a total of 1,125 m<sup>3</sup> of concrete

#### Client

The Danish Road Directorate

#### Type of contract

Main contract in partnering

#### Contractor

Aarsleff, Construction and Piling

#### Consultant

Rambøll A/S

#### Construction period

1 August 2011 to 1 August 2012

#### Contract value

DKK 55 million

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