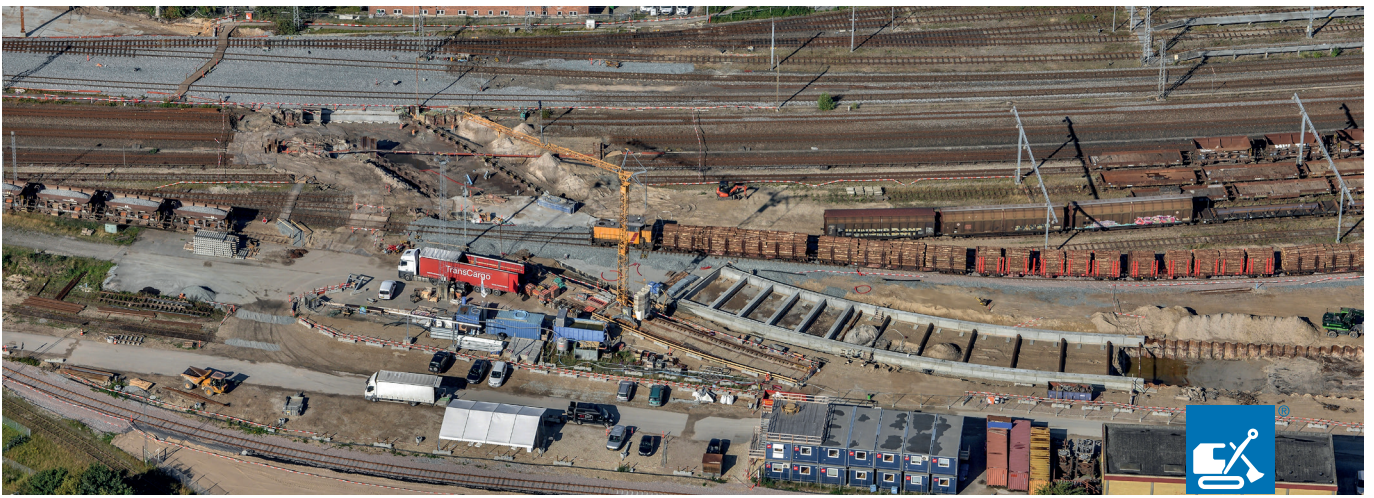


Road tunnel in Køge

Construction of a 150-metre-long tunnel at busy train station



AARSLEFF

To improve traffic conditions in Køge, Per Aarsleff's divisions Construction and Ground Engineering have in one company cooperation with Aarsleff Rail constructed a 150-metre-long tunnel beneath 11 railway tracks at Køge Station. The road tunnel will provide an improved and safe link between town and harbour.

Advanced top-down tunnel structure

First, we had to prepare and clear the area around the railway tracks. This involved relocation of several large pipes and cables. The tunnel was carried out in three phases by means of the so-called top-down method to reduce track closure for engineering work. In three phases, we removed some of the tracks, excavated for the top plate, drove sheet piles, carried out groundwater lowering drillings, cast the top plate and reinstated the tracks. Between the tunnel work phases, train traffic was diverted to reduce disruption of train services.

Once we had installed the tunnel top plate, the train traffic could resume across the reinstated tracks. Then we started excavating the tunnel beneath the top plate. The final part of our work included casting of tunnel base slab and walls, construction of ramps and connection of the new structure to the existing road structures. In addition, we carried out lighting, railings and plantation on the adjoining areas.

Challenging areas and round-the-clock work

The project was carried out close to residential areas and close to a railway station with eleven tracks in service. So the surroundings were quite a challenge and required us to focus highly on planning and safety issues. For the groundwater lowering, we carried out pump wells between the sheet pile walls, and we also carried out reinfiltration wells. So during the tunnel excavation, we had to handle water pressure on the outer sheet piles as well as infiltration of water. We used diesel vehicles in a confined space during the excavation, so we had to find a solution that supplied fresh air thus preventing our staff from being exposed to fumes potentially hazardous to health.

The project also proved challenging in terms of time, as the client wanted all tracks back in service as soon as possible. So a major part of our top plate work was carried out round the clock. This was especially the case during the phase involving commuter train tracks, as this phase included reinstatement of signalling systems, overhead catenary system and 23 hours of uninterrupted concreting.



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Data

- 700 m of driven sheet piles
- 28,000 m³ of excavated soil
- 900,000 m³ of pumped-up groundwater
- 7,500 m³ of concrete cast in situ
- 1,100 tons of installed reinforcement.

Client

Køge Kyst P/S

Contractor

Aarsleff Bane & Anlæg I/S

Subcontractor

Wicotec Kirkebjerg A/S

Type of contract

Main contract

Consulting engineer

COWI A/S

Construction period

March 2015-September 2016

Contract value

DKK 109.5 million

Contact

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