

# Ceres Byen, Aarhus

14 contracts and installation of more than 150,000 linear metres of piles



**AARSLEFF**

Per Aarsleff A/S has executed the piling works for the development of Ceres Byen on behalf of the client A. Enggaard A/S. From the fall of 2012 until the summer of 2017, the area, which previously housed the Ceres Brewery, has been converted into a combination of both residential and commercial developments as well as educational institutions. In addition, several underground car parks have been constructed in the area, some as multi-storey car parks.

## Close collaboration

The piling works were carried out as 14 individual contracts distributed over the entire construction period. When signing the first contract with A. Enggaard A/S, we did not realize how comprehensive the overall project was going to be. The project design phase was well under way and the plans for the area changed as the work progressed.

The many contracts and the long execution period resulted in a very close collaboration with A. Enggaard A/S. In practice, this meant that the employees generally dealt with both challenges and solutions

on site, resulting in a good progress without delays – to the satisfaction of both parties.

## Piling

The majority of our work comprised driving of piles of different dimensions. All the piles were driven with a sound barrier mounted to the hammer – a more time-consuming solution – but of great importance to the overall noise level. Despite driving of more than 150,000 linear metres of piles in central Aarhus, we did not receive any complaints regarding noise nuisance – nor from VIA University College, who were the first ones to move in, and they went through with teaching during the main part of the construction phase.

## Electronic pile driving logs

All the pile driving logs were recorded electronically. In this way, the geotechnical engineer could process large amounts of data and determine the bearing capacity of the piles with greater certainty and be able to optimize.

### Pre-boring

We used the piling rig to pre-bore holes in some places before the pile driving. This helped to minimise the vibrations, which can occur during the pile driving

### Vibration measuring

The requirement of the vibration frequency was less than 5 mm/s on the surrounding buildings. In order to document compliance of this requirement we installed vibration monitors on the adjacent buildings.

### Adaptable solutions

We had to use a different piling method in certain areas in consideration of some of the surrounding buildings, especially a worth preserving façade from the former brewery and because of the need for retaining walls in the fast-growing building process. With assistance from our Design & Engineering department, new solutions were designed and executed such as anchored sheet piles, secant piles and bored GEWI piles.

<p><b>Data</b></p> <ul style="list-style-type: none"> <li>• 150,503 LM of piles (25x25, 30x30 and 35x35)</li> <li>• 390 LM of sheet piles</li> <li>• 370 LM of steel piles</li> <li>• 101 ground anchors</li> <li>• 128 LM of king post wall</li> <li>• 68 LM of secant pile wall, DN520, incl. waling and ground anchors</li> <li>• 1521 LM of GEWI piles (73 No. of DN40 and 5 No. of DN50)</li> </ul>	<p><b>Client</b> A. Enggaard A/S</p> <p><b>Contractor</b> Per Aarsleff A/S</p> <p><b>Type of contract</b> Subcontract</p>	<p><b>Consulting engineer</b> Niras A/S Geo</p> <p><b>Construction period</b> September 2012-2018</p> <p><b>Contract value</b> Approx. DKK 55 million</p>
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Aarsleff Ground Engineering is one of Europe's leading piling contractors, and we undertake a wide variety of piling, drilling and foundation projects in Denmark and abroad. We have offices in Poland, Sweden, Germany and the UK.

We have 35 to 40 different units ranging from fully hydraulic piling and drilling rigs, cranes and vibrators.

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