

Durham Castle

Complex logistics to complete contig wall project in historic landmark

Built c. 1080, the Norman Chapel is Durham's oldest building and is located within the UNESCO World Heritage Site of Durham Castle. During its long history the chapel has seen much change in the surrounding area, one of the many changes was the construction of an earth embankment to create a terrace outside of the building over 100 years ago. The method used means that the soil piled against the outside of the chapel is creating damp that is causing damage to the historic stonework and carvings within the chapel.

Aarsleff were contacted to develop a piled solution to allow 5m depth of soil to be removed from the chapel walls and a ventilation system installed to remedy the problem. We developed a cantilevered contiguous bored pile wall using 450dia SFA piles. The wall stretches 17 metres with a retained height of 5m.

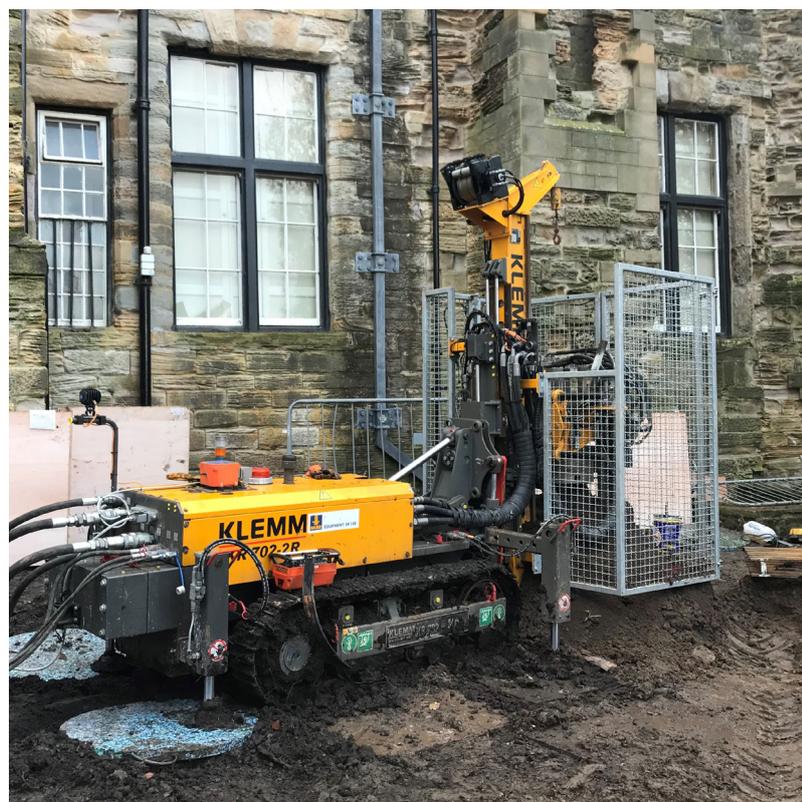
Working within a UNESCO World Heritage Site meant the solution had to be low vibration, exclude hot works, could not touch or clash with the building and could only employ small plant capable of accessing the working area. This very restricted access meant we had to cane a mini-piling rig over the castle wall to cross a temporary bridge and then track around the Castle motte.

Due to the need to use small plant, this also restricted the pile diameter. This meant that the piles had to be heavily reinforced with cages that were fixed on site and installed in spliced

sections by spider crane. The isolated and restricted working area also meant that conventional concrete could not be delivered to site, so piles were formed with site batched cementitious grout. We were also on site through the artic blast during December 2022, meaning safety risks were elevated and plant had to be more carefully monitored.

The restricted access and the site's complex history meant that ground information was limited. AGE engineers provided a design based on the pre-construction information available and verified this information on site during construction to ensure the suitability of our design.

Working with these restrictions proved a welcome challenge for the Aarsleff team and all piles were installed to depth without clashes or damage to the structure. Our Project Manager and Supervisor maintained good collaboration on site to manage logistics and safety with the main contractor. Steel fixers and an archaeological team were also on site, the latter watching to ensure the historic building was protected during the process. In the end, we are proud to have designed and delivered a bespoke and robust scheme to enable our clients to deliver the solution needed to save the Norman Chapel.



AARSLEFF

Data

- 17 x 5m contiguous bored pile wall
- Utilising 450dia SFA piles

Client

Brims Construction Ltd

Type of contract

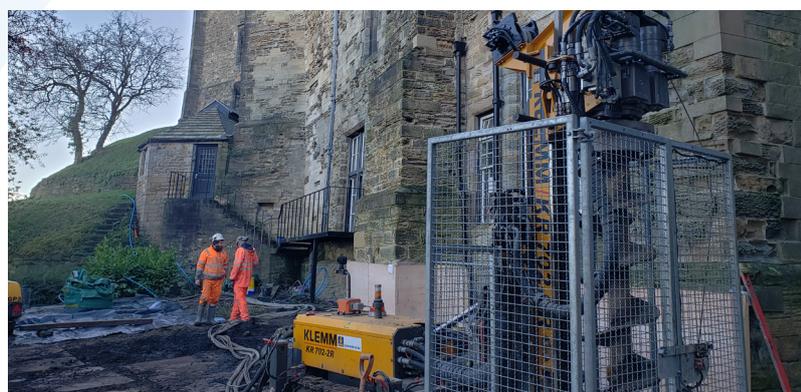
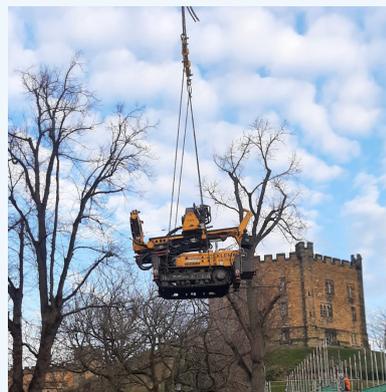
Design and build contract

Construction period

December 2022 - January 2023

Contact

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