

Welwyn Garden City, Phase 1

Aarsleff delivered a complex geotechnical design and technique to treat unstable loose soils to support modern new housing development.



AARSLEFF

In June 2021, Aarsleff Ground Engineering was appointed by Crest Nicholson to undertake the treatment of loose, unstable grounds on a new housing development located in the heart of Hertfordshire, near London. Phase 1 of the housing development consists of 8 new homes, with plans to build a further 10 homes in a second phase, due to start in September.

Aarsleff Ground Engineering carried out compaction grouting, traditionally used to treat a wide variety of loose soils with good drainage. The work is performed from the surface, and it is possible to drill through hard materials to gain access for treatment of low strength strata beneath the covers.

The first phase of compaction grouting took five weeks, using three of Aarsleff's CasagrandeC6-XP rigs. The holes are being drilled against a 2m x 2m grid with 101/79mm holes running as deep as 20m. The holes are then injected with a 6:1 ready mixed sand cement. In total, Aarsleff drilled 193No. Holes for phase 1.

Additional test holes were also drilled to 17m bgl to confirm the effectiveness of the compaction grouting and to check for quality assurance.

Compaction grouting is a process employed to increase the soil's density by injecting a stiff, mortar-like grout under pres-

sure through cased boreholes. The grouting is usually carried out bottom-up, in successive stages of about 1m. As the grout is pumped in, it gradually forms a bulb that pushes the surrounding soil to the side, increasing the soil's relative density. The degree of densification depends on the type of ground treated and the grid pattern for the injection points. Injection rates vary from 2 to 6m³ per hour, reducing to 1m³ per hour in susceptible conditions. Injection pressure is in the range of 1 to 4MPa.

Aarsleff coordinated a smooth and efficient process with all members of the design team and geotechnical engineers involved in the project, adopting an open and honest approach throughout to deliver a cost-effective solution without sacrificing high quality service that clients have come to know and expect from Aarsleff Ground Engineering.



Data:

Scope of works:

- 193No. 20m deep, 101/79mm holes drilled to a 2m x 2m grid
- 6:1 ready mixed sand cement

Client

Crest Nicholson

Construction period

June 2021 - July 2021

Main contractor

Aarsleff Ground Engineering

Equipment:

- Casagrande C6-XP x3 rigs

Aarsleff Ground Engineering is one of Europe's leading piling contractors, and we undertake a wide variety of piling, drilling and foundation projects in the UK and abroad. We have offices in Denmark, Poland, Sweden, Germany and Norway.

Our fleet covers hydraulic piling and drilling rig as well as cranes and vibrators.

Contact

Aarsleff
Ground Engineering
info@arsleff.co.uk
Tel. +44 6136 611140