

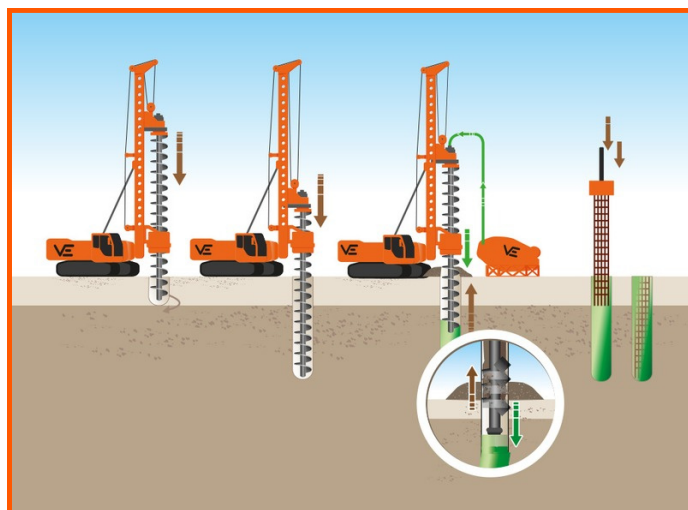
CONTINUOUS FLIGHT AUGER (CFA)

OPEN SITE PILING

Continuous Flight Auger (CFA) piling is a highly versatile technique for installing foundations in a wide range of ground conditions. It is a fast, quiet and virtually vibration-free method, making it ideal for projects in urban locations, adjacent to existing buildings and in environmentally sensitive areas where noise and vibration need to be minimised.

CFA piles can be designed to provide vertical, lateral and tension support. The method also allows piles to be constructed in water-bearing and granular strata without the need for temporary casings.

UNDERSTANDING CFA



CFA piles are constructed using a continuous hollow stemmed helical auger, which is rotated into the ground to the design depth.

This installation method allows piles to be formed in water-bearing and granular strata without the need for temporary casings.

On reaching the founding level, high-slump or flow concrete is pumped through the hollow stem in a controlled manner, maintaining a pressure head of concrete while the auger is simultaneously extracted.

As the auger is extracted, soil contained within the flights is cleared using an auger cleaner. Once the bore is filled with concrete, the pile reinforcement cage is installed into position to form the completed pile.

Throughout the installation process sophisticated onboard computers monitor both the boring and concreting process.

The real-time system provides the operator with feedback on auger depth, auger revolutions, drill pressure, concrete pressure, and concrete overbreak.

A cloud-based online data portal allows engineering teams to monitor pile installation data and contracts remotely in real time.



PROJECT ADVANTAGES

- Fast, quiet and virtually vibration-free
- No requirement for casing, bentonite or polymers
- Cost-effective and versatile, suitable for most ground conditions
- Higher production rates than most other bored piling methods
- Requires less plant and equipment on site compared with the rotary bored method

EXAMPLE APPLICATIONS

- Structural foundations across all construction sectors
- Suitable for clay, granular material, glacial till, and weaker rock stratum, including water bearing strata.
- Secant and contiguous piled retaining walls can be used in conjunction with temporary props and permanent anchors
- Slope stabilisation and retention to prevent slips and landslides
- Retention for deep excavations and basements adjacent to existing structures
- Working near buildings, homes, and environmentally sensitive areas
- Infrastructure projects, including tunnelling, road and bridge construction, and flood prevention

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OPEN SITE PILING

SILK STREAM, SILK PARK PHASE 1B

Sector: Residential

Client: St George, part of the Berkley Group

Van Elle were appointed by St George to deliver the CFA works for Phase 1B over a six-week programme.

Rock & Alluvium delivered the scope involving the installation of 199 No. 450mm diameter piles, 20 No. 600mm diameter piles, and 62 No. 750mm diameter piles using a Soilmec SR75 rig.

Piles were installed from a higher existing ground level, adjacent to sheet piles and the newly constructed Phase 1 structures, while demolition works were ongoing nearby in preparation for Phase 2.

Works contributed to the creation of new residential apartments and parking facilities, following on from Phase 1, which included the relocation of Sainsbury's into a new retail unit with five residential towers constructed above.

The project demonstrated our ability to deliver CFA piling efficiently in a constrained site with limited access, working alongside other construction activities while maintaining the programme.



SUBSEA CABLE FACTORY, NIGG

Sector: Energy

Client: Europlan

Van Elle were appointed by Europlan on behalf of Sumitomo Electric to deliver CFA piling works at the Port of Nigg in the Scottish Highlands to support the construction of a subsea transmission cable factory.

The works included 1,955 No. CFA piles, ranging from 450 mm to 900 mm diameter, installed to average depths of 16–17 m with 2 m rock sockets.

A further 296 No. CFA anti-floatation piles were installed, alongside 1,256 No. rigid inclusions as part of the wider foundation solution.

The remote coastal location presented challenging ground and logistical conditions, including high groundwater requiring stabilisation and dewatering, complex delivery sequencing and adverse weather.

The project demonstrated our ability to deliver large-scale CFA piling works across a range of pile diameters and depths, in challenging ground and site conditions.

