



Continuous flight auger (CFA)

A fast and economical piling solution for a variety of applications. Ideal for sensitive built-up areas and unstable soil.

Geotechnical solutions for the construction industry

Technical highlights

- Resists high compressive, lateral and uplift loads
- Piles with various diameters of 300 mm to 1000mm+
- Piles to be installed in depths up to 30m+
- No vibration
- Low noise level
- Quality assurance to European Standard EN 1536e level
- Rigs equipped with monitoring and instrumentation to maintain a high standard of pile construction

Introduction

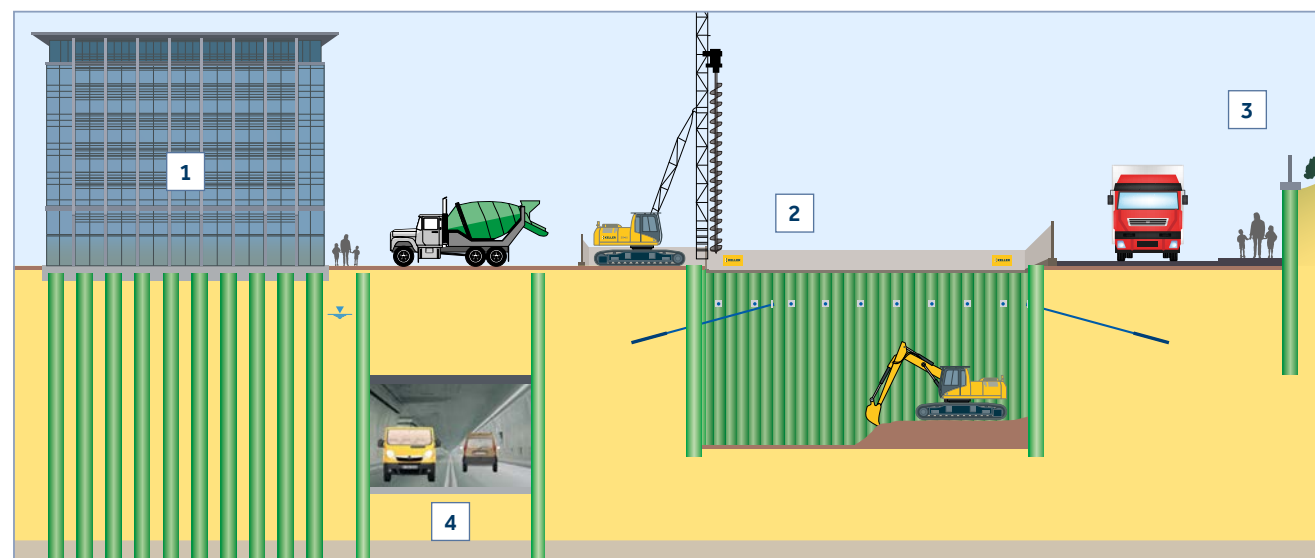
Continuous flight auger (CFA) piles are a type of bored cast-in-place replacement pile. Using high specification, instrumented rigs, the piles are drilled and concreted in one continuous operation enabling much faster installation time than for other piles of this type. Reinforcement is placed into the wet concrete after casting enabling the pile to resist the full range of structural loading.

Benefits

Keller's CFA piling system is ideal in built-up areas with weak soil conditions and high levels of ground water, due to the vibration-free construction process and low noise level. A large range of diameters are available and piles can be installed to depths up to 30 m+. CFA piles can be installed in most soil conditions such as sands, clays, silts, gravels and soft rock. Compared to bored piles, the construction of CFA piles is very quick as temporary casings or bentonite in unstable soils or temporary support systems in water bearing soils are not required. CFA piles are an economical means of pile construction.

Applications

Keller CFA piles are cast-in-situ piles, used to provide structural support for buildings and bridges or to provide earth retention structures.



1. Foundations

CFA piles are extremely effective at providing structural support for a range of structures such as buildings by transferring loads into the underlying soil.

2. Lateral support to excavations

CFA piled walls are an established method of providing earth retention on site boundaries or close to adjacent buildings. These are generally installed as CFA contiguous piles or secant piles.

3. Slope stabilisation

CFA piles are used to prevent landslides or protect existing buildings and are often combined with other techniques such as ground anchors or soil nails.

4. Infrastructure

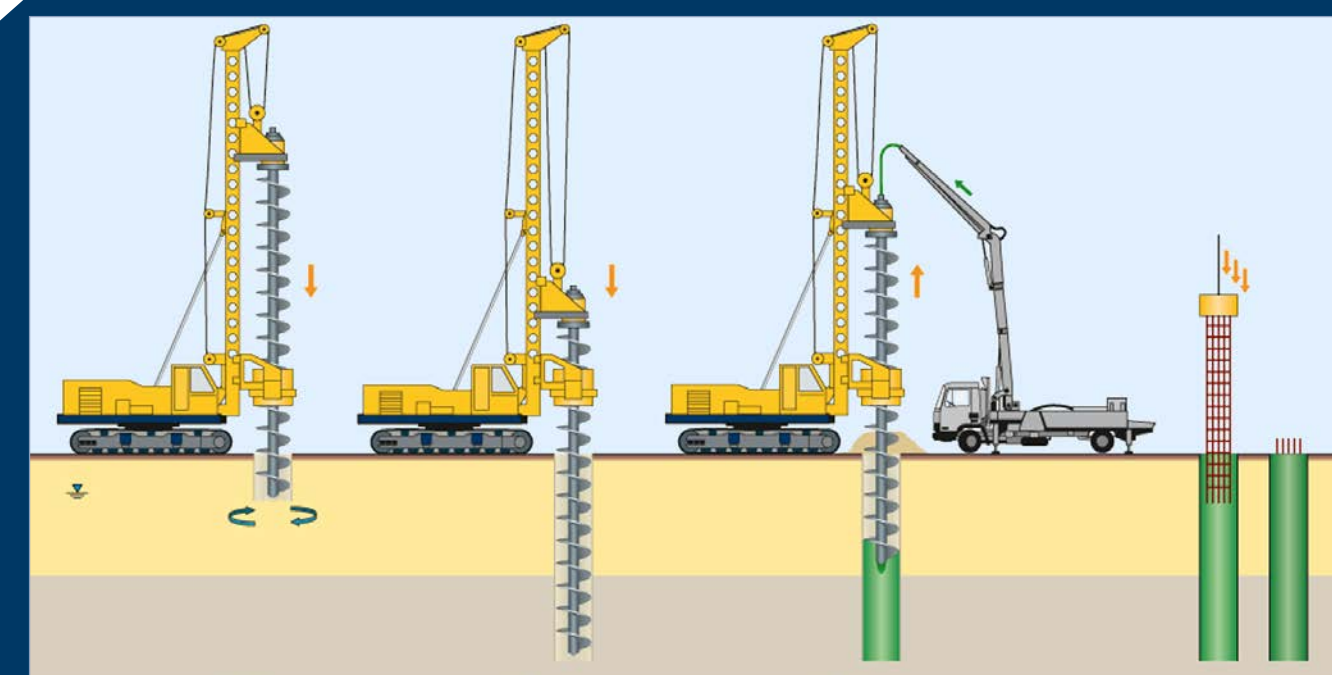
CFA piles can be used in a variety of infrastructure projects such as tunnelling, road or bridge construction as well as flood protection.

Product description

CFA piles are constructed by rotating a hollow-stem continuous flight auger into the soil to a designed depth. Concrete or grout is pumped through the hollow stem, maintaining static head pressure, to fill the cylindrical cavity created as the auger is slowly removed. The reinforcement cage is placed through the freshly placed high slump concrete. Typically, Keller CFA piles are reinforced with a rigid six metre-long cage as a minimum (subject to design and specification requirements). However, there is the ability to install much longer cages as and when required by the design or specification. Where required, a specially developed vibrator unit assists with the placing and accurate location of the reinforcement cages.

Quality control

Close control of the installation process is essential to ensure the highest quality pile construction. All Keller CFA rigs are equipped with sensitive state-of-the-art instrumentation that monitors all aspects of CFA piling, including pile depth, auger rotation, penetration rate, concreting pressure, extraction rate and over-break. The instrumentation produces an individual log for each pile that includes element identification, date, time and operator details. This is reinforced by a documented QMS procedure. Quality assurance is achieved through a range of non-destructive testing methods to evaluate both pile integrity and/or load-settlement performance. Selection of verification technique is project and application specific.



Drilling

Concreting

Reinforcing

IGBTL Beira Oil Storage Terminal, Mozambique

Frankipile Moçambique Limitada installed more than 400 No. 650mm diameter CFA Piles up to depths of 26m at the Beira Petroleum Terminal in Mozambique.

The bulk storage plant included 6 petroleum and water storage tanks of 20m to 32.5m diameter and various light supporting structures.

Pile design was carried out from two static pile load tests conducted on site with reference to Eurocode 7: Geotechnical Design.

Ground conditions in the project area are extremely challenging with very soft peaty clays extending to depths of between 21 to 26m below ground level, but Franki used its extensive experience in the area to overcome those difficulties.

Keller Africa

Geotechnical specialist contractor
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