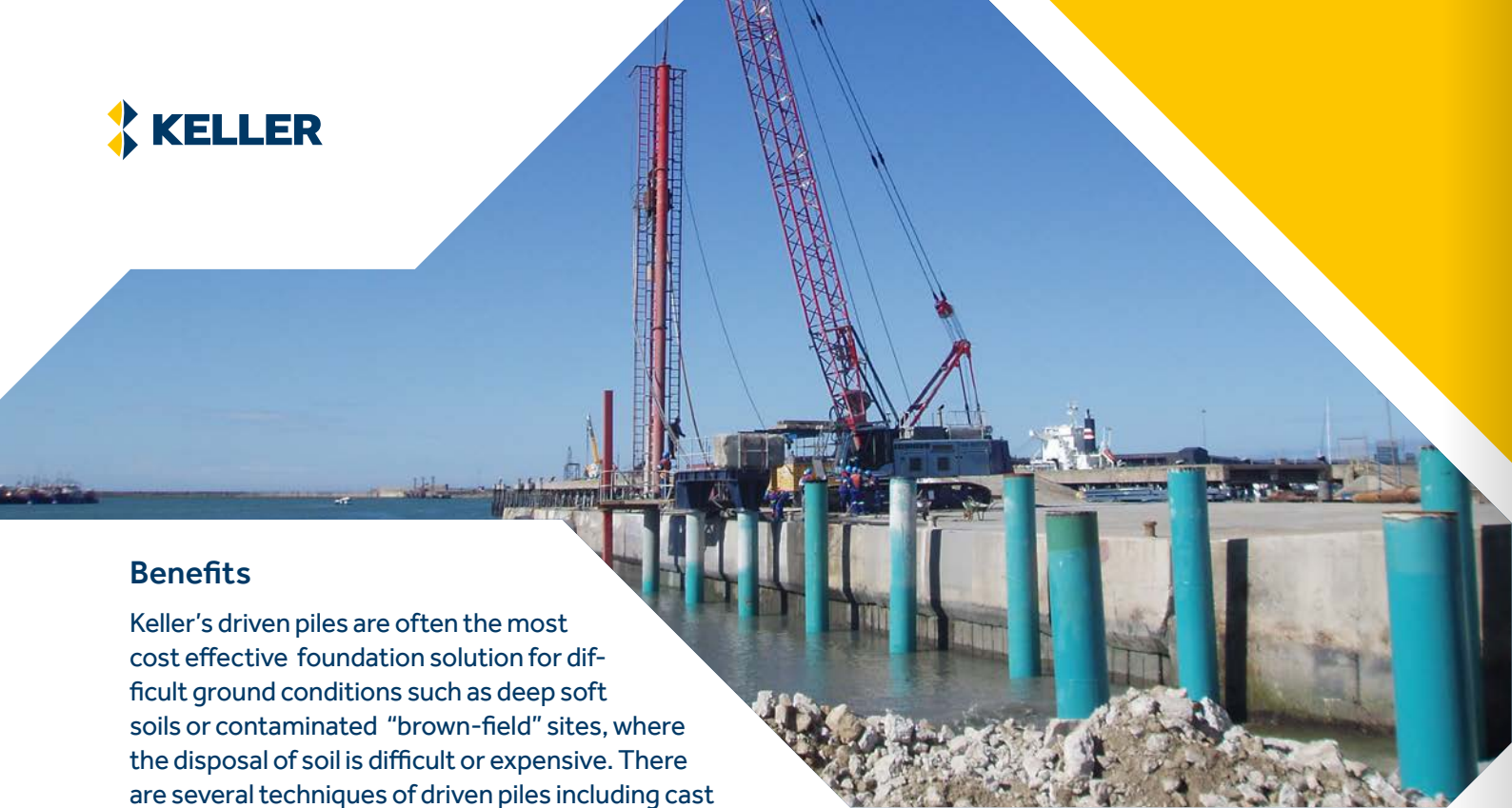


Driven piles

Often the most cost effective deep foundation solution, driven piles can be pre-formed or cast in-situ. Unlike bored piles they do not produce spoil unless predrilling is needed to achieve the required founding depth.



Benefits

Keller's driven piles are often the most cost effective foundation solution for difficult ground conditions such as deep soft soils or contaminated "brown-field" sites, where the disposal of soil is difficult or expensive. There are several techniques of driven piles including cast in-situ and pre-formed (concrete or steel piles):

- Cast in-situ Franki or KGB piles. These piles are formed with an enlarged base, and can take high loads when compared to straight shafted piles, and can generally be founded at shallower depth due to the enhanced base capacity.
- DCIS piles. Quick to install, these piles are often installed with an integral pile cap that can reduce the thickness of any floor slab that is supported by them.
- Pre-formed Precast piles. These can normally be reinforced or prestressed. They can be a variety of shapes, square, circular or hexagonal. Precast piles may also be coated with a bituminous layer to combat very aggressive ground conditions.
- Steel piles. Useful where there are obstructions in the ground or where piles have to be driven over water. These can be tubular or "H" in section shape.

Applications

The versatility and robust nature of Keller's driven piles allows them to be used for all types of construction, particularly in aggressive soil conditions. The fact that they are driven to a "set" or a pre-determined resistance, means that they are well suited to sites where the ground conditions are highly variable.

Small pile size	Medium pile size	Large pile size
Underpinning houses and light buildings	Foundations for new buildings	Wind turbines and pylons
Limited headroom	Infrastructure	River bridge foundations
Difficult access	Floor slabs and load transfer platforms	Bridge abutments and piers
	Used in conjunction with king post walls - lateral support for earth retention	Marine construction

Technical highlights

- Resists compressive, uplift and lateral loads
- Extensive range of pile sizes
- Piles may be installed to significant depths > 80 m
- Rapid follow-on construction
- Unaffected by ground water
- No spoil generation unless predrilling is required
- Noise and vibration needs to be considered and managed

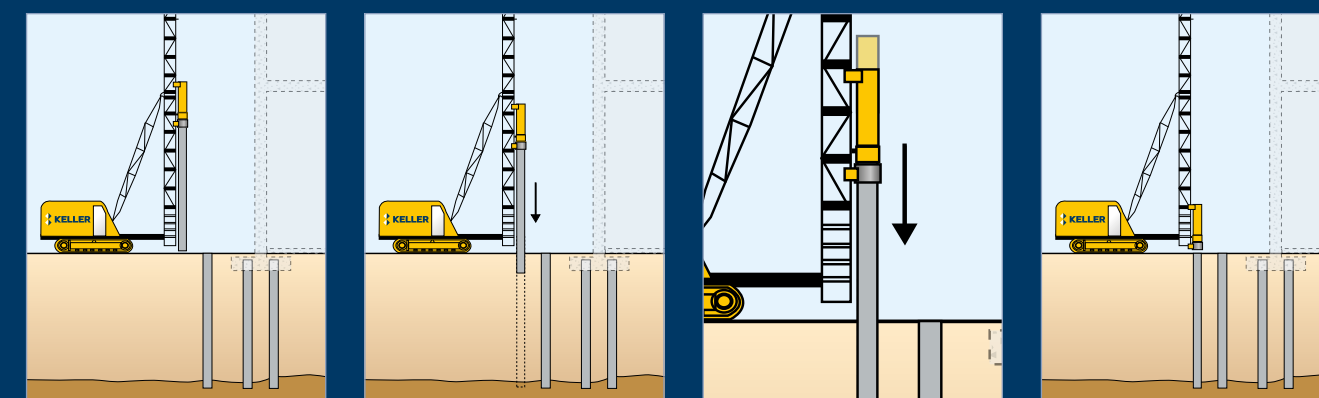
Driven piles – Product description

Driven pre-formed piles are installed using hydraulic or diesel hammers to a designed depth or resistance. For precast and steel piles individual elements may be joined together either using pile joints (Keller has developed its own range of cost effective pile joints) or by welding. This means that preformed piles may be driven to great depths (exceeding 80 m).

For cast in-situ piles, heavy steel tubes are either top or bottom driven into the ground, again to a designed depth or resistance. Once the desired toe

level is reached, concrete is introduced into the tube by skip or pump, reinforcement placed and the tube extracted. Various diameters may be selected and Keller will normally advise the client as to the optimum size, dependent on the ground conditions, to reduce the overall pile length (and cost).

An enlarged base can be formed at the pile toe after driving but before placement of the shaft concrete. This enlarged base significantly enhances pile settlement performance and increases pile load capacity.



Locating

Driving the pile into the soil

Close-up

Final driven pile in the soil

Mauritius Multi-Sports Complex, Mauritius

The Mauritius Multisport Complex, main venue of the 2019 Indian Ocean Games, is founded on Franki type enlarged-base driven piles.

The complex, consisting of 15 000 seater football/ rugby stadium, an athletics track, aquatic centre and multi-sport arena, employed various types of geotechnical methods for its foundations, including rigid inclusions, bored and driven piles.

Over 800 Franki type enlarged-base DCIS piles were utilized for the main stadium structures as a cost-effective alternative to large diameter bored piles.

The Franki enlarged-base DCIS piles generates high capacity at relatively shallow depths and allows the project to be completed within an accelerated construction program.

Keller Africa

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