

# Cofra

*embankment on piles*

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**Building worldwide on our strength**

# © AuGeo *embankment on piles*

The installation or renovation of infrastructure needs to be performed ever quicker and under strict conditions, in particular on main roads and motorways. As a result, our vertical drainage or BeauDrain techniques may not provide the desired results. For these projects, Cofra has developed the AuGeo system. Using this technique it is possible to deliver settlement-free road construction platforms in a very short space of time.



Installation of AuGeo piles for the southern carriageway of the A15



Transition construction to traditional roadbed



Underside of mattress

## The AuGeo technique

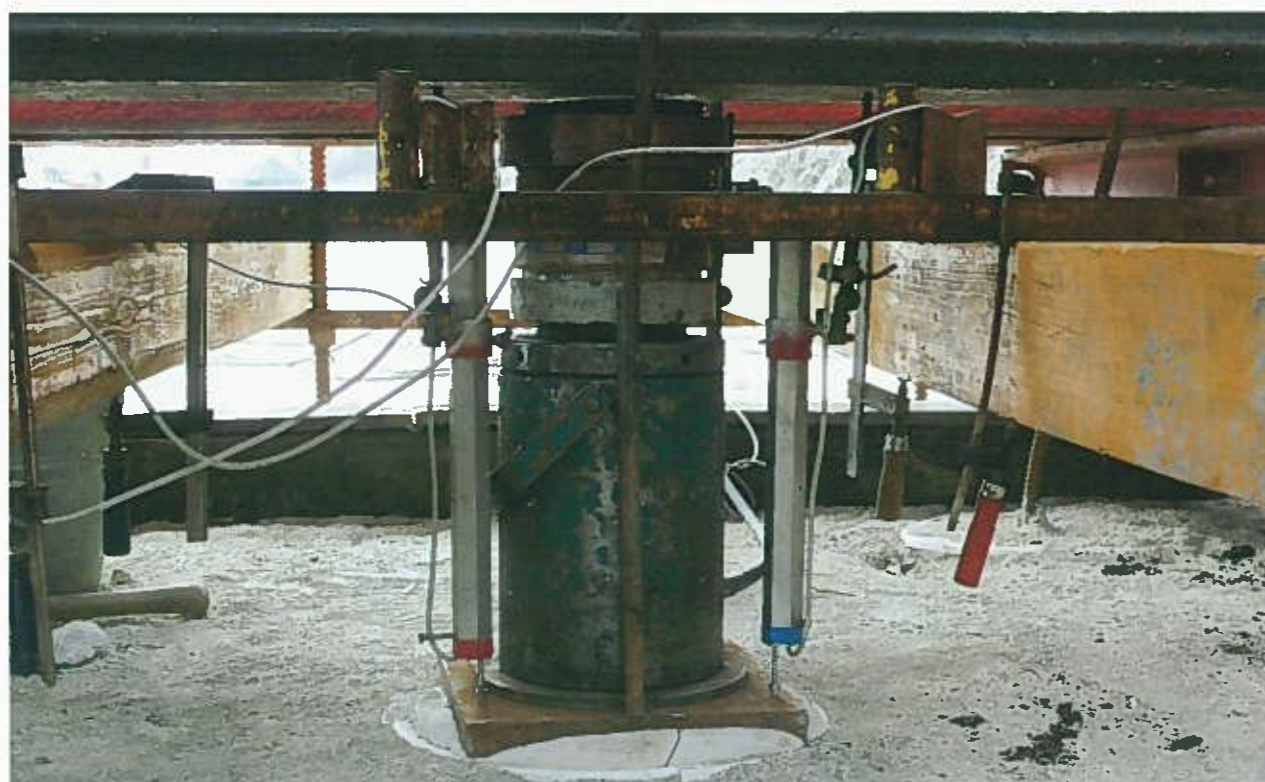
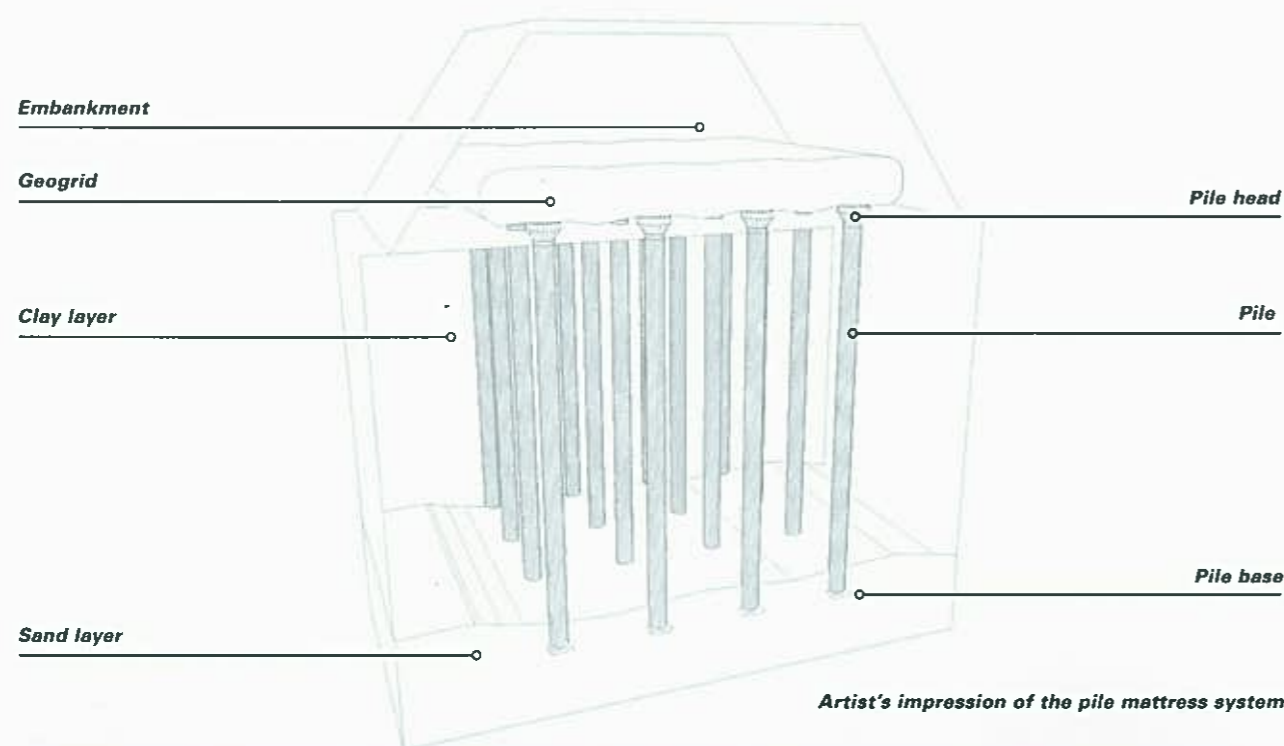
The AuGeo technique is a pile mattress system and differs from other techniques on the market by the use of a permanent casing when creating the piles, so that a minimum pile dimension can be guaranteed. This is particularly important in soft soil, where a large number of piles are installed by displacing the soils. A load-transfer platform (LTP) is constructed directly onto the piles. The LTP consists of geo-grids and a low modulus fill material.

## Why AuGeo?

The settlement-free nature of the AuGeo technique means that it is well-suited for projects in locations where there are existing buildings or infrastructure that must not be subjected to vibration and settlement damage. Thanks to the high production rates that can be attained, large areas can be made settlement-free in short periods. Due to the installation method using a static downward force, it is guaranteed that each pile has a predetermined load-bearing capacity. This also means that local variations in the soils can be accommodated.

## Installation of the AuGeo system

The AuGeo piles are installed in a pre-determined pattern from ground level. The piles are installed using a modified vertical drain "stitcher". A round steel tube and a base plate are pushed into the ground until the required resistance is achieved. The tube is inserted at a regular speed, thereby keeping disruption of the subsoil and the piles that have already been installed to a minimum. When the pre-determined depression resistance is reached, the pressure is maintained and a plastic casing is placed in the tube. This plastic



*Test loading of AuGeo pile performed in a project in Slovakia*



*The geogrid mattress with granulate fill*



*The geogrid mattress without granulate fill*

casing is three-quarters filled with mortar before the tube is pulled up. After the complete withdrawal of the tube, the plastic casing is left behind in the subsoil. The plastic tube is then cut to length and fitted with a reinforcement basket and round pile head with pressure edge after which, the tube is then filled with concrete. After the concrete has cured sufficiently, the space between the pile heads is filled with sand or peat and the geo-grid is laid on top of the piles according to the design. Following the laying of the geo-grid, the mattress filling which consists of broken stone or aggregate is applied and the geogrid folded back above the mattress.

#### **Applications of the AuGeo technique include:**

- > Installation and widening of roadbeds for new motorways and railways
- > Widening of motorways and railways
- > Foundation for roads in extension areas
- > Foundations for company floors

#### **Advantages of the AuGeo system:**

- > Rapid installation:
- > High production rates possible
- > Vibration-free and low-noise installation
- > No risk of instability
- > No impact upon the environment
- > No settlement time
- > Guaranteed pile diameter



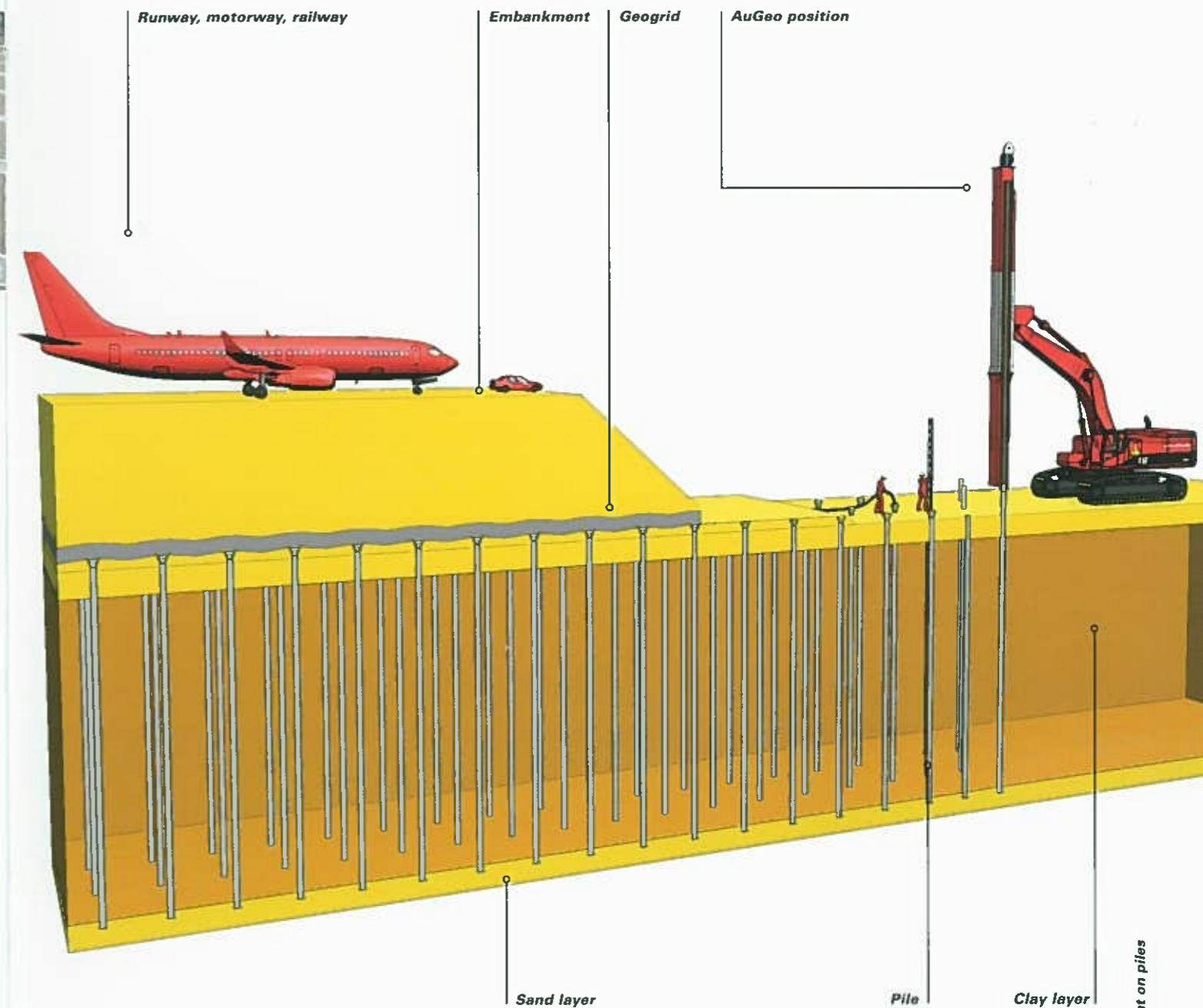
#### Cofra

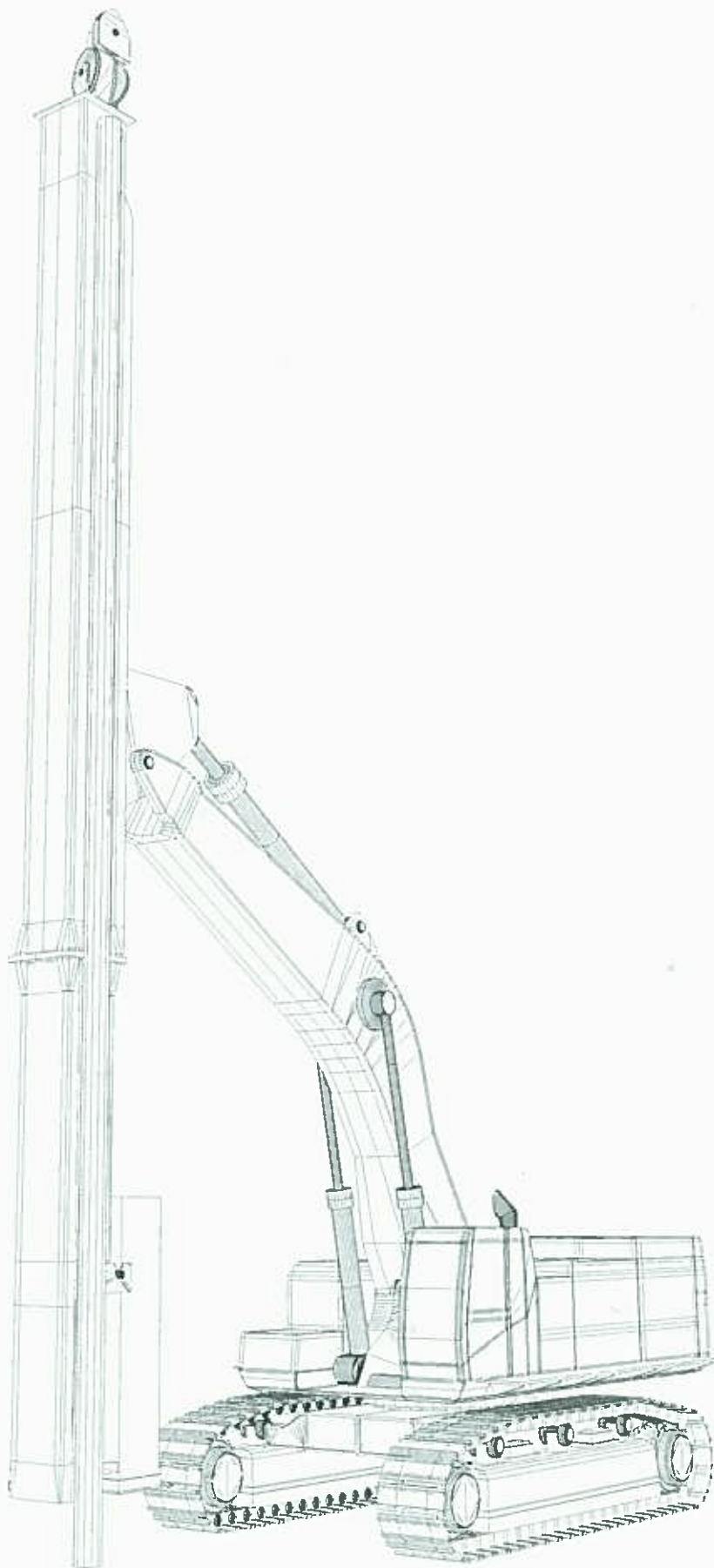
Cofra B.V. is an innovative contractor specialising in ground improvement techniques and membrane construction. Quality is everything to us and thanks to our high level of experience and expertise we can provide the entire process from design to implementation all under one roof. Cofra, and, its sister company Geotechnics, is part of the internationally operating company Royal Boskalis Westminster. Cofra is active in specific sectors of civil engineering, ground improvement techniques and geotechnical hydraulic and gas barriers. Cofra is always working on the development of new ground improvement techniques.

#### Other Cofra techniques:

- > BeauDrain(-S)
- > HDPE seals
- > CDC
- > Vertical drainage
- > Geolock

You can find more information about the AuGeo technique and other Cofra techniques on our website [www.cofra.com](http://www.cofra.com).





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