Atlaspile

Full soil displacement
bored pile, vibration free - low noise
economical
Possible applications
The Atlaspile is used where more economical driven piles are not practicable for environmental reasons and/or soil transport is to be avoided because of contamination. The dimensioning and the manufacturing of Atlas-piles is implemented according to DIN 1054 and DIN EN 12699 (2000). For initial dimensioning, experience values for the Atlas pile in the “EA piles” are given, for both non-cohesive and cohesive soils.

Manufacturing process
A steel tube, to which a replaceable cutting head is attached, is pressed into the ground while turning. The cutting head displaces / compacts the soil laterally. The overall dimensions of the cutter head determine the pile diameter. The cutting head is sealed water-tight by a pointed head left in place. Cutter head and pipe are screwed vibration-free into the ground with a rotary actuator, with simultaneous downward pressure. The hydraulic driving pressure is measured during drilling and compared with the subsoil survey (drilling profiles, probe diagrams). When the planned depth has been reached the reinforcement cage is installed. The pipe and the storage container are filled with concrete. Tube and cutter head are withdrawn by turning backwards. The tip of the foot loosens in this case and the cutter head forms the pile. The concrete column in the tube and the storage container with their high static pressure fill the void created immediately with concrete. In this way a helical concrete bulge approximately 5 cm thick is created in the ground around the pile shaft. The implementation is with a well-proven special unit and qualified personnel. Within the framework of the quality assurance, the manufacturing parameters can be registered automatically.

Environmental friendliness
The Atlaspile is constructed without vibration and with little noise. Because of this, it is also suitable for forming foundations in densely populated regions, health resorts and in direct proximity to neighbouring vibration-sensitive construction developments. Because of the full soil displacement there is no loosening of the subsoil. The minimum distance to existing construction development is 80 cm.

Cost-effectiveness
The short setting up time, the speedy construction of the piles and the high load-bearing capacity of the threaded Atlas pile result in good cost effectiveness and shorter construction periods. This installation process and the control of the necessary resistances enable the lengths of the piles to be well matched to the changes in subsoil layers.

Frontispiece: Atlas piles for a new building of VR-Bank in Pinneberg (Germany)
Manufacturing process

1. Boring in the cutter head with downward pressure
2. Adjustment of the reinforcement cage on reaching the necessary drilling depth
3. Filling up of the pipe and the container with concrete
4. Screwing out and drawing of the pipe, as well as concreting the pile
5. Cap of the pile head; Preparation of the connection reinforcement

The pile is finished and, after hardening, ready to support loads
Head reinforcement possible

Non-Load-bearing fundation soil
Load-bearing fundation soil
Soil displacement and compacting
GW
GW
GW

Details

Atlas X
Pitch 4:1
Pitch 4:1

Cutting head

Pile dimensions

Salvaged Atlas Pile
Finished constructions

- Theatre at the river Elbe, Hamburg
- Residential building, Hamburg HafenCity
- EWE-Arena, Oldenburg
- Academie of communication, Heilbronn
- State archiv of Lower Saxony, Stade
- InterCityHotel, Central Station, Berlin
Load test of an Atlaspile in cohesive soil, pile Ø 41/51 cm

Soil profile
- Filling
- Mud
- Marl

Cone penetration test

Resistance - settlement graph

Load test of an Atlaspile in non-cohesive soil, pile Ø 46/56 cm

Soil profile
- Filling
- Fine-grain sand
- Peat
- Fine-grain sand
- Medium-grain sand

Cone penetration test

Resistance - settlement graph

Technical Data

<table>
<thead>
<tr>
<th>Pile Ø d,cm</th>
<th>R_{xk} in non cohesive soil</th>
<th>R_{xk} in cohesive soil</th>
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<tbody>
<tr>
<td>cm</td>
<td>kN</td>
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<tr>
<td>31/41</td>
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</table>

The loads and tube diameter must be suited to the particular subsoil conditions.

We would be pleased to advise you!
Production process for an Atlas pile with displacement tip

1. Drilling and side displacement of the contaminated layer with the tip of the pile
2. Drilling into the load-bearing layer and producing the shaft of the pile
3. Screwing out and withdrawing the tube and concreting the pile

Production process for an Atlas pile with sealing plug

1. Drilling in the drill tube for the plug in the impervious layer
2. Screwing out and withdrawing the tube and at the same time filling the void created with sealing material
3. Drilling through the sealing material with the drill tube and producing the Atlas pile in the conventional way

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