



Fast foundations for a carbon-free future





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ROTOPILE AS COMPANY



Headquartered in Lisbon, Portugal, with branches in Finland, Brazil, and Mozambique. Rotopile operates worldwide..



Services: 1) *Helical pile manufacturing* 2) *Foundation design* 3) *Helical pile installation*

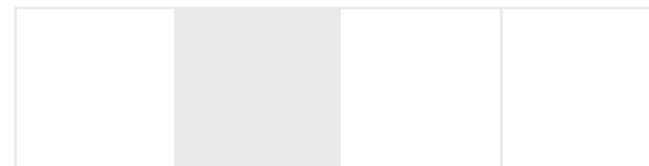


With over 20 years of experience in manufacturing and installing helical piles and over 40 years of experience in geotechnical investigation and geotechnical engineering, Retopile is the most experienced helical piling company in Europe.



References can be found and seen across 15 different countries in a wide variety of forms, from residential building projects to infrastructure projects, road & rail, industrial projects, oil- and gas; in the energy sector, powerlines, transformer stations, and solar power, multiple projects for states and cities, and a sort of private projects.

01





WHAT ARE HELICAL PILES?



A helical pile is a deep foundation that can be installed very rapidly and with minimal noise and vibration. The pile consists of a steel shaft and one or more helices.



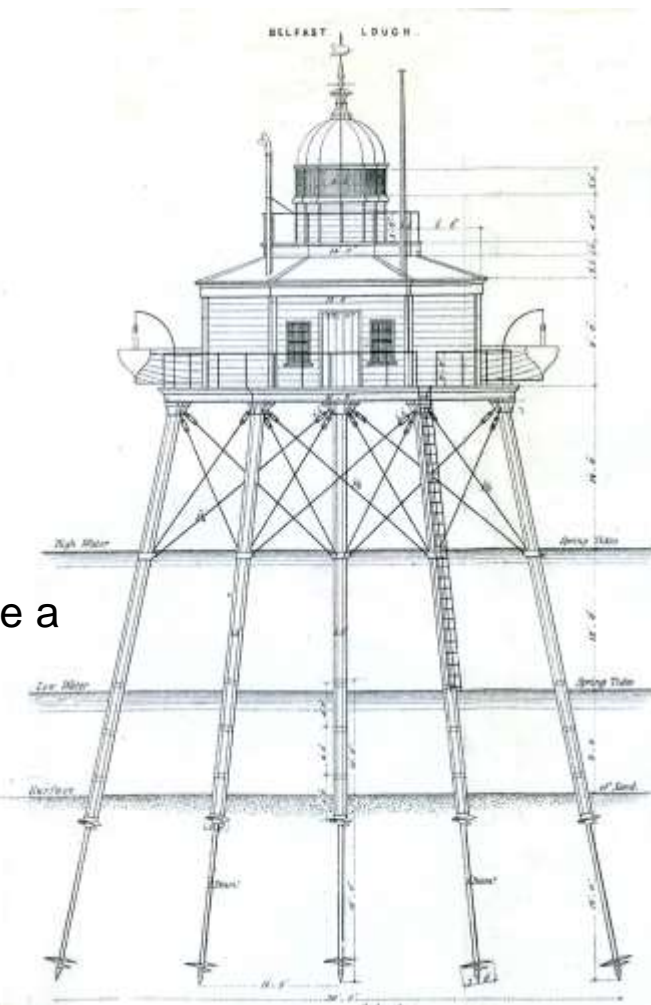
Because of the wide supporting area of the helical part, the helical piles typically have a higher load capacity than hammered steel piles of the same size.



Screw Piles don't typically require excavation work, soil removal, de-watering, nor require any mold work or curing time like concrete does.



The usage of helical piles goes back to 1833 when Mr. Alexander Mitchell invented them.





WHAT ARE HELICAL PILES?

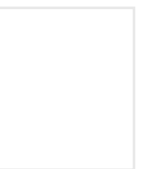
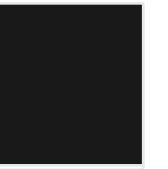
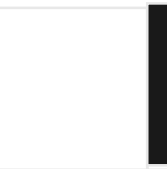
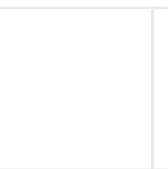
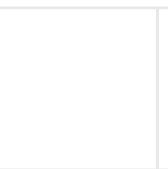
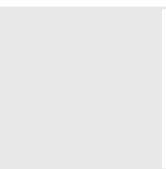
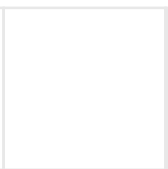
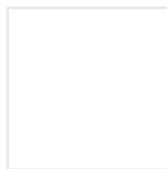
- Common helical pile tube sizes are between 60-330mm (2.36-13 In). Helice diameters can vary from 150mm up to 1 000mm (39.4 In)
- Sometimes helical piles are mistakenly mixed with “ground screws”. However, helical piles have better load-bearing- and tension capacity than ground screws.
- Rotopile manufactures PRO™ helical piles for professional use, and HELIX™ piles for lighter construction projects as well. Rotopile products come with a 50 – 100 year warranty.





WHAT ARE THE BENEFITS OF HELICAL PILES?

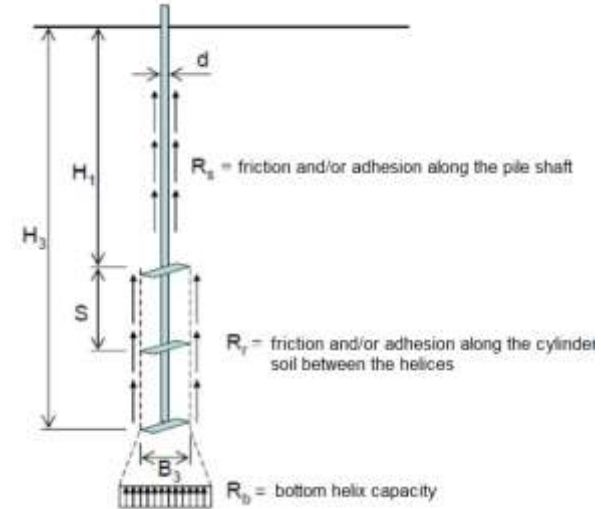
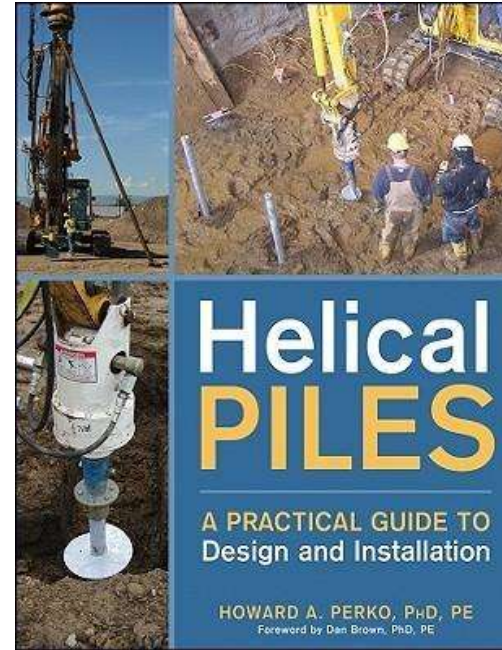
- SPEED - Fast installation without excavation, soil removal or concrete works
- COST - Installation speed, less equipment use, and fewer work phases, provide savings along the process.
- STRONG - Superior load capacity will work well even with poor kinds of soils.
- ENVIRONMENT - Less unwanted impact on worksite and environment, low CO2, and the possibility of recycling.
- AGILITY - Smaller equipment required, which facilitates transportation and can be brought to remote locations.
- RELIABILITY - Helical piles are an extremely long-lasting solution and their capacity can be verified reliably..





HELICAL PILE MECHANICS AND DESIGN PRINCIPLES

- Helical pile capacity follows the same design principles as steel pile design in general – the biggest difference comes from the larger tip area and the ability to act as an anchor
- The torque-to-capacity method provides a reliable way to perform on-site quality control during installation
- Design relies on Eurocode – only the anchor pull-out capacity under tension load relies on the relevant literature and design principles used by anchor manufacturers. Rotopile offers complete foundation design services.





APPLICATIONS WHERE HELICAL PILES CAN BE USED



The helical piles can be used in both compression- and tension type of applications.



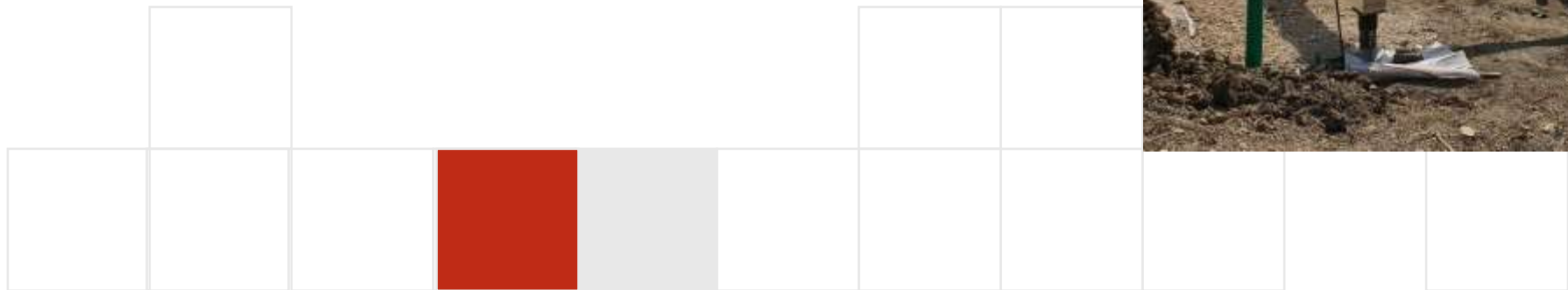
Typical small construction applications: terraces, fences/gates, stairs, small houses, garages, solar panels, walkways, traffic signs, etc.



Typical large construction applications: houses, industrial halls, powerline masts, noise barriers, bridges, gantries, air domes, concrete slabs, etc.



The helical piles can be also used in underwater applications.



TYPICAL APPLICATIONS

TERRACES/PATIOS



FENCES



PIERS



TYPICAL APPLICATIONS

GARDEN HOUSES / GARAGES



COTTAGES / HOUSES



ADVERTISING DISPLAYS / PYLONS



TYPICAL APPLICATIONS

FOUNDATION- AND FLOOR STRENGTHENING



AIR DOMES AND SPORT HALLS



SOLAR PANELS



TYPICAL APPLICATIONS

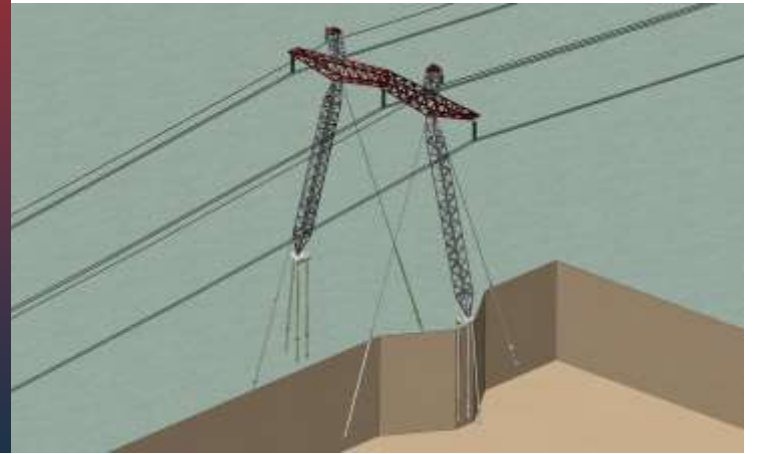
NOISE BARRIERS



OIL- AND GAS PIPELINES



ELECTRIC POWERLINES



TYPICAL APPLICATIONS

WALKWAYS



AGRICULTURE



DIY



TYPICAL APPLICATIONS

SITES WITH LIMITED ACCESS



SITES ON RAILS



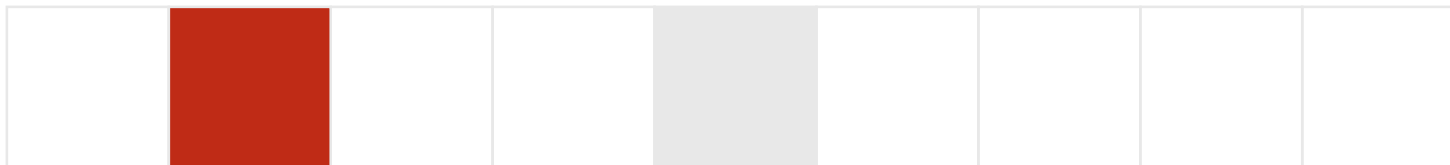
SITES NEAR- OR IN THE WATER





HOW IS THE HELICAL PILE INSTALLATION?

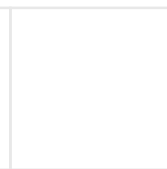
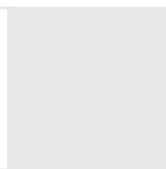
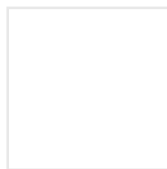
- The typical installation speed is about 30-80 piles per day depending on the soil and the size of the piles. Load capacity is verified during installation from the installation torque.
- The most common installation machines are excavators, front loaders and a telehandler or a truck crane as well.
- Compared to the hammered piles, helical piling does not cause noise and the installation can be done at any time of the day.
- By request, Rotopile can provide only the installation equipment together with installation training. Rotopile can also provide small-scale excavation works by request.





ECONOMICAL ASPECTS

- No large excavation nor earth removal is needed. Neither are many contractors required, Rotopile alone can take care of everything related to foundation works.
- 5 to 10 x faster process than making the concrete foundations = lower project costs and better ROI for your project
- No risk of delays caused by weather, as helical piles are possible to be installed in all weather conditions.
- The usage of compact equipment and the requirement of just a small team of operators save in mobilization, and therefore, in work costs. Additionally, less site preparation works are needed compared to other piling methods implemented with bigger machinery. Because of this, less work is needed to restore the site to its former state after installation.





ECOLOGICAL ASPECTS



The helical piles have about 50% smaller carbon footprint than a concrete foundation of the same size.



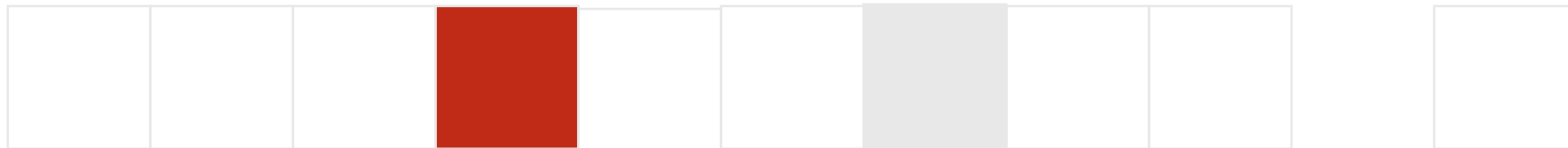
It is usually possible to use shorter helical piles compared to hammered steel piles, which saves in material usage, moreover, reduces the CO2 footprint. Helical piles are also recyclable, the pile can be unscrewed and reused.



Because of the small installation equipment and lack of excavation, the installation site stays undamaged and clean with the possibility of preserving trees and other vegetation.



Possibility to use piles as a source of geothermal cooling may create significant savings in cooling energy. With energy optimization carbon-free projects as a fact.

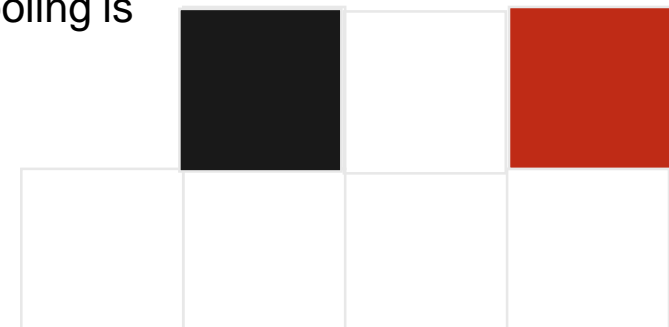




ENERGY PILES

The Helical piles can work as a source of heating and cooling by embedding geothermal collectors inside the piles.

- 1) Saves the drilling costs of a Geothermal well
- 2) Long piles can save customers' costs by being a source of free heating and cooling source, instead of being an 'unpleasant expense.
- 3) Only a total of 150m piling meters are required to take care of the heating and cooling of the normal 100m² household in Northern Europe. Usually, fewer piling meters are required when only cooling is applied.
- 4) Plenty of small- and large size references in Finland





ON-SITE LOAD VERIFICATION AND LOAD TESTS

- The helical pile load capacity can be verified on-site during installation by monitoring the installation torque.
- Possibility to perform both compressions- and tension static load tests.
- Piling report including data of each pile installed provided from each site.

PILINGSHEET

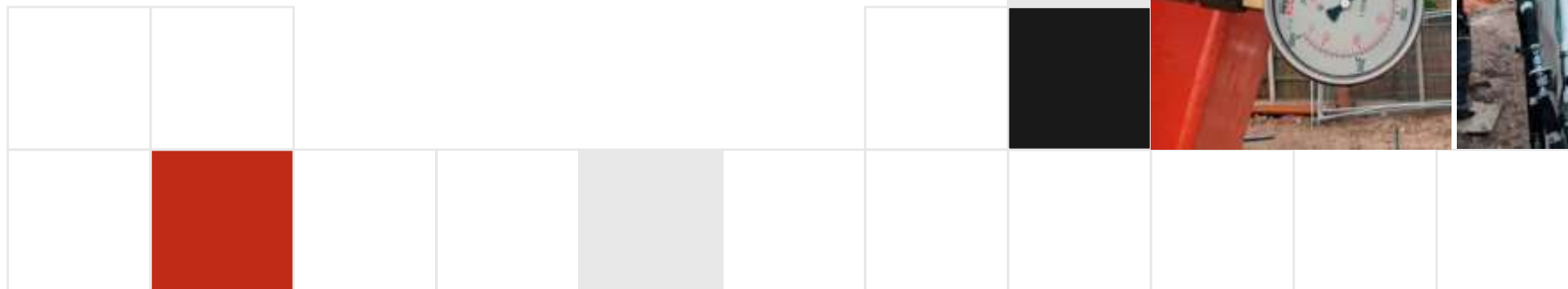
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ECO-HOUSING



The helical piles are the fastest, most cost-efficient, and the most environmentally friendly foundation method there is.

That's why helical piles are the perfect foundation for residential eco-housing projects where fast project termination is required. The High ROI, the keeping the environment untouched, the recyclability, and the low carbon footprint are the main selection criteria.

With energy piles and well optimization, completely carbon-free projects are possible more than ever.

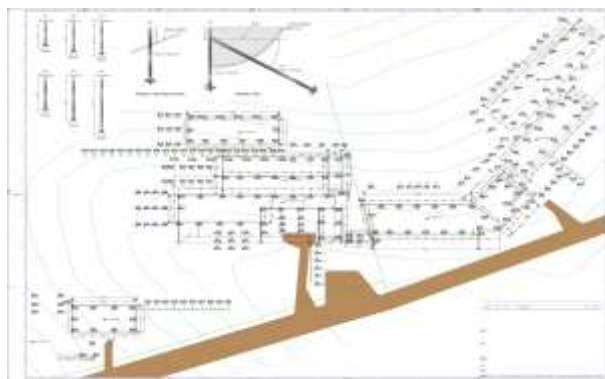




CASE: SANTA KATHARINA, COMPORTA PORTUGAL

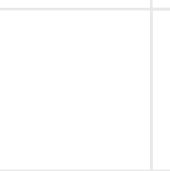
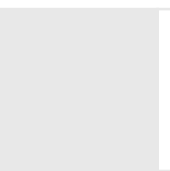
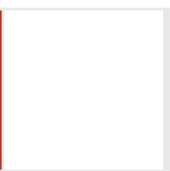
PROJECT SPECS:

- CLT-panel Eco-villa project in Comporta Portugal 1/2022
- More than 300 pcs. Rotopile PRO™ helical piles are used in sizes 88.9 – 114.3mm



GAINED BENEFITS:

- Major cost-savings in the price of foundations
- Significant project time savings
- Trees and the rest of the site stayed undamaged
- Notably decreased CO2-footprint





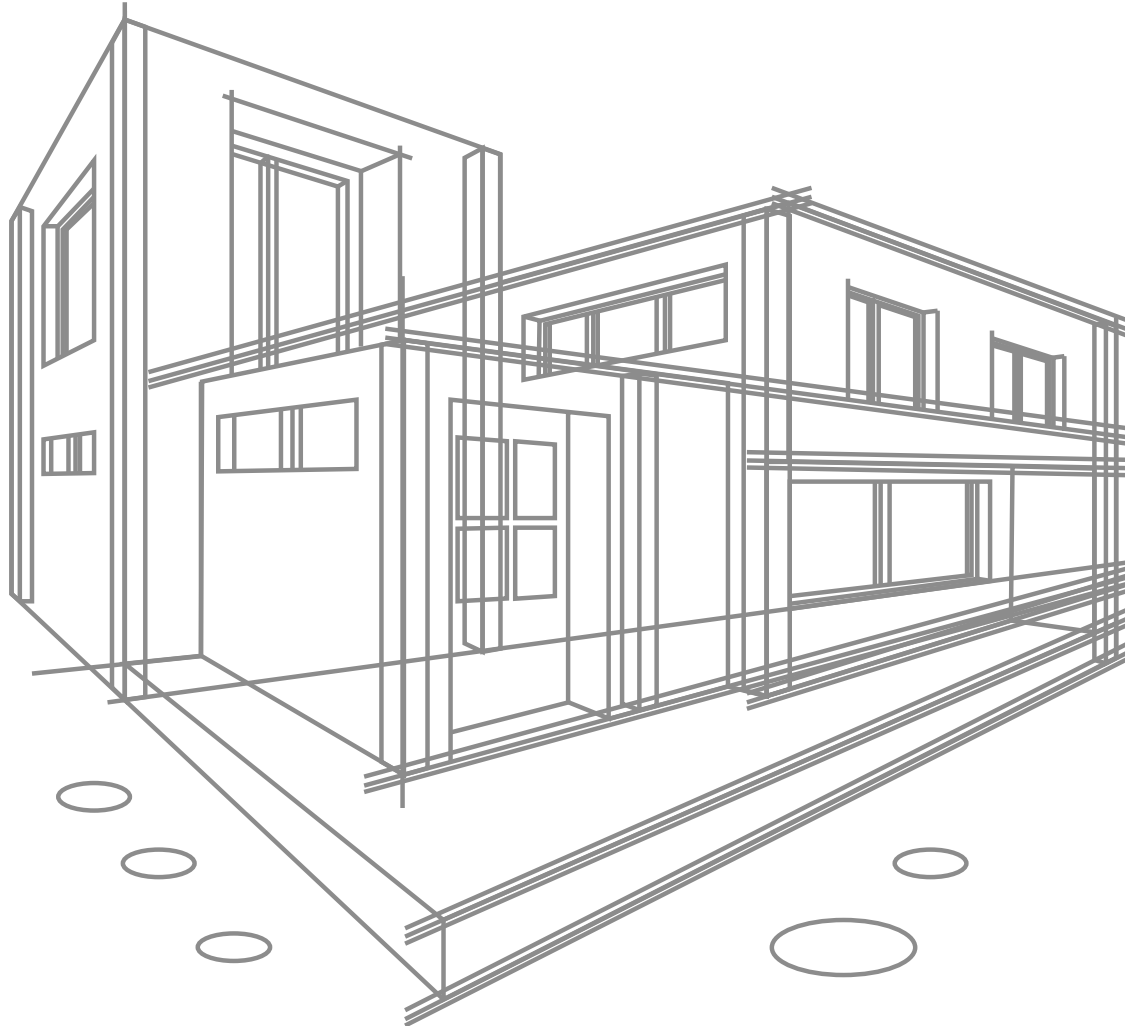
PROCESS OF THE TYPICAL PILING PROJECT

- 1) Initial data: Geotechnical investigation + specs of the building/structure
- 2) Foundation Design
- 3) Piling quotes based on the design
- 4) Order and contract of the work
- 5) Setting the installation date
- 6) The Pile manufacturing process and site preparations (topographer)
- 7) Pile installation
- 8) Delivering piling reports and material certificates for the client








YOU HAVE A PROJECT WHERE HELICAL PILES COULD BE USEFUL
...BUT NOT SURE HOW TO PROCEED?



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**WE WANT TO KNOW MORE
ABOUT YOUR PROJECT**