CLL Olivier Piling Technology

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SERVICE & SOLUTIONS

Clients benefit from this depth and breadth of services in key areas

VERSATILE EXPERTISE

CLL offer a comprehensive suite of services beyond piling and ground stabilisation, as our company excels in a wide range of civil construction disciplines.

Whether it's foundation work, structural engineering, or infrastructure development, we offer a one-stop solution for all your civil construction needs.

PROVEN TRACK RECORD

Rely on our established reputation backed by a track record of successful projects.

From intricate piling assignments to complex infrastructure developments, our expertise has consistently delivered quality results, earning the trust of our clients.

COST-EFFECTIVE SOLUTIONS

By consolidating various civil construction services under one roof, our clients experience streamlined project management, reducing the need for multiple contractors. This not only enhances overall project efficiency but also leads to potential cost savings.

AT CLL, we extend our footprint across New Zealand, operating seamlessly through specialised divisions strategically established in key regions such as Northland, Tauranga and Christchurch with our head office based in Auckland. Our centralised approach from Auckland allows us to efficiently coordinate and manage projects throughout the country, ensuring a consistent and high-quality service delivery.

INNOVATION AND TECHNOLOGY

Stay ahead in the industry with our commitment to innovation and technology. Our company embraces cutting-edge advancements, ensuring that your projects benefit from the latest methodologies, materials, and equipment, leading to increased efficiency and project success.

ADAPTABILITY TO PROJECT SCALE

With over 200+ employees, whether you're undertaking a small-scale project or a large-scale development, our team is equipped to adapt to the unique requirements of each endeavour. Enjoy the flexibility and scalability of our services to match the specific needs of your civil construction projects.

CLIENT-CENTRIC APPROACH

Experience personalized service with our client-centric approach. We prioritize open communication, collaboration, and a thorough understanding of your project goals, ensuring that our solutions are tailored to meet your expectations and contribute to the overall success of your endeavours.

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SERVICES & SOLUTIONS

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CLL GROUP (CLL) is a well-established construction company specializing in piling, ground improvements, slip stabilization, ground anchors, retaining walls, civil structures, drainage, and contaminated site remediation. With extensive experience across these disciplines, CLL has built a strong reputation as a reliable and innovative industry leader.

At CLL, we pride ourselves on being at the forefront of ground improvement and piling techniques, leveraging advanced European technologies that set us apart. These cutting-edge systems allow us to tackle complex challenges efficiently, often eliminating provisional tags from tenders and streamlining project delivery. Our collaborative approach ensures that we work closely with your design consultants to develop cost-effective, fit-for-purpose solutions for in-ground challenges.

As part of our commitment to strong partnerships, we offer our expertise and time at no cost—providing indicative pricing and tailored recommendations to help achieve project goals efficiently.

CLL employs 250+ professionals, including engineers, project managers, estimators, machine operators, tradesmen, and skilled labourers. Our workforce includes specialist piling crews and industrial rope access teams, as well as tradesmen such as carpenters, mechanics, and formwork specialists.

OUR EXPERTISE

Geotechnical & Civil Engineering Solutions

- Piling solutions (Olivier Piling, CFA, Bored, Driven, Sheet Piling)
- Retaining and stabilization systems
- Ground anchors and soil nailing
- Deep foundation and ground improvement techniques

Critical Slip Rehabilitation & Drainage

- Earthworks and slope stabilisation
- Cross road drainage and culvert installation
- Swale and water diversion systems
- Manhole and bored drain installations

Specialized Construction Services

- Bridge and structure foundations
- Marine piling and coastal protection
- Infrastructure resilience solutions
- Sustainable construction initiatives

WHY CHOOSE CLL?

- **Industry Leadership:** Cutting-edge European piling and ground improvement technologies.
- **Experience & Expertise:** Decades of experience in delivering large-scale infrastructure projects.
- **Innovative Methods:** Leaders in advanced piling and geotechnical stabilization.
- **Sustainability Focus:** Commitment to environmentally friendly construction practices.
- **Safety & Quality Assurance:** Adherence to the highest industry standards.
- **Project Delivery Excellence:** Proven track record of delivering projects on time and within budget.

LET'S WORK TOGETHER

We welcome opportunities to collaborate on upcoming projects. Get in touch to discuss how CLL can bring value to your project by contacting the person who gave you this brochure or via our branches located on the last page of this document.

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OLIVIER PILING TECHNOLOGY

The Olivier pile is a patented drilled displacement pile made of concrete (or reinforced concrete) with a screw-shaped (helical) shaft, that is produced without vibration and without soil removal.

Due to its screw shaped shaft, the Olivier pile is suitable for soils with low load-bearing capacities, such as clay and loam, but it can be used in almost all types of soil.

The Olivier pile can be made with any foundation machine with a minimum torque of 10 t/m. The Belgian, Gerdi Vankeirsbilck, applied for the production patent for the Olivier pile in April 1996 and various licenses have been granted for this technique in Belgium and internationally. In 2018, a new patent was applied for, which involved a method of drilling without the use of a lost bit.

An Olivier pile is drilled into the ground using a drilling rig with a top-type rotary drive with variable rate of penetration. A lost tip is attached to a partial-flight auger which, in turn, is attached to a casing. The casing, which is rotated clockwise continuously, penetrates the ground by the action of a torque and a vertical force.

At the desired installation depth, the lost tip is released, and the reinforcing cage is inserted into the casing. Concrete is then placed inside the casing through a funnel.

The casing and the partial flight auger are extracted in a counter-clockwise rotation, producing the Olivier pile shaft in the shape of a screw.

Common auger head diameters:

- Diameter 510mm
- Diameter 610mm
- Diameter 710mm

OLIVIER & TRADITIONAL FDP COMPARISON

OLIVIER PILE
Screw-shaped shaft

NEW OLIVIER DPA
Smooth to slightly curved shaft

TRADITIONAL FDP
Smooth shaft

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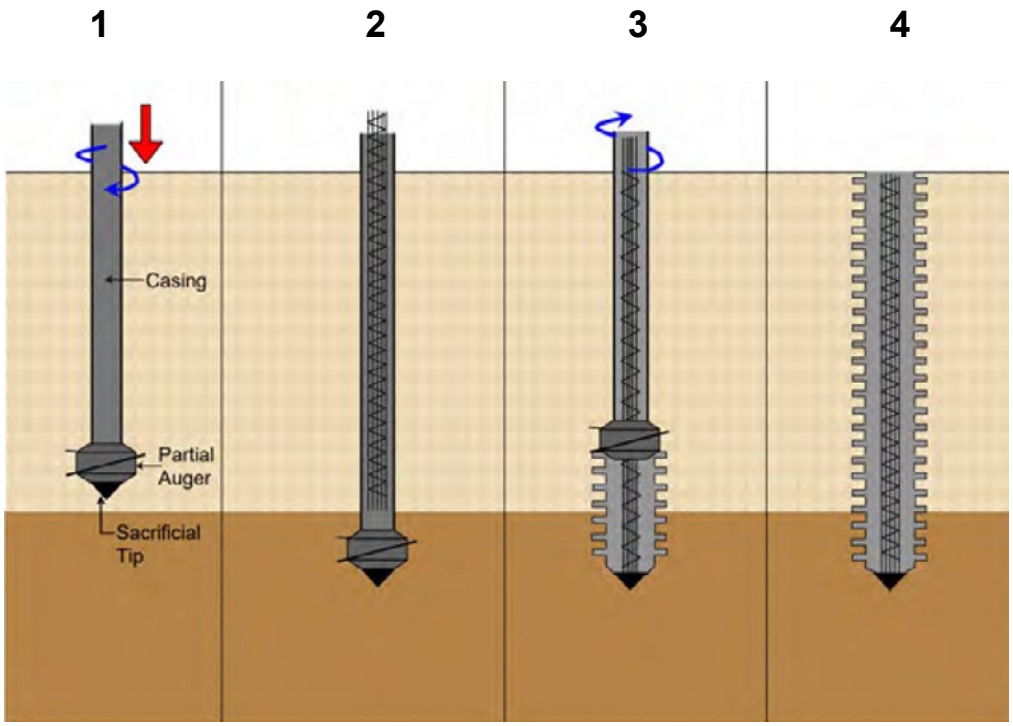
OLIVIER IMPLEMENTATION

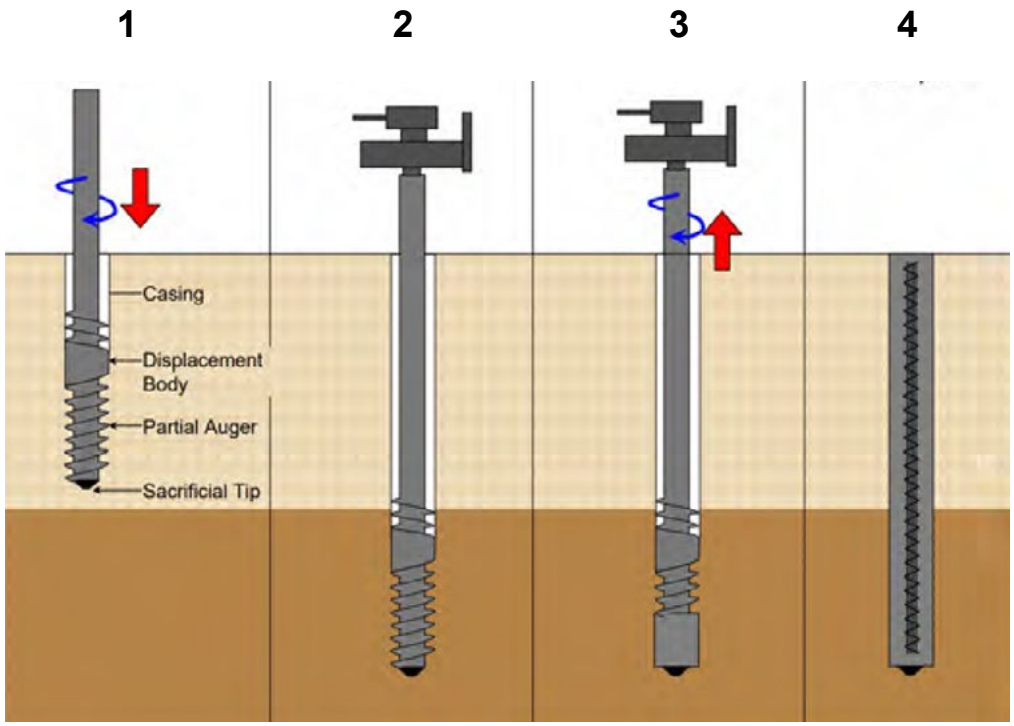
Drilling in is done in a clockwise direction, screwing back is anti-clockwise (reversed).



1. Drilling with clockwise auger rotation an vertical force.
2. Insertion of reinforcing cage and release of sacrificial tip at the desired depth.
3. Concrete pumping and extraction of casing with counter-clockwise rotation.
4. Completed OLIVIER pile with screw-shaped shaft.

TRADITIONAL FDP IMPLEMENTATION

Drilling in and out is always done in the same direction (clockwise).



1. Drilling with clockwise auger rotation and vertical force.
2. Concrete injection and release of sacrificial tip at the desired depth.
3. Extraction of casing with clockwise rotation and vertical force.
4. Insertion of reinforcing cage and completed pile.

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CLL will soon be adopting OLIVIER's new cylindrical full displacement pile, which can be drilled into the ground even more easily. It includes an automatic coupling for drilling pipes to enable faster and more efficient construction of foundations.

The new cylindrical full displacement pile (OLIVIER DPA) allows construction on both hard and unstable soil layers.

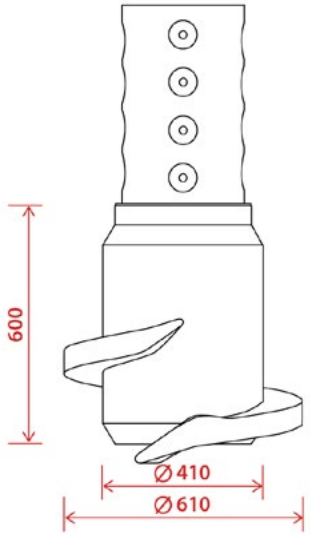
The pile can be drilled without vibrations, even through layers of sand.

The unique flaps system and reusable drill tip eliminates the need to replace drill tips manually after each pile, which reduces the risk of accidents and injuries significantly, as well as costs.

AUGER HEAD - Useful Drilling Length

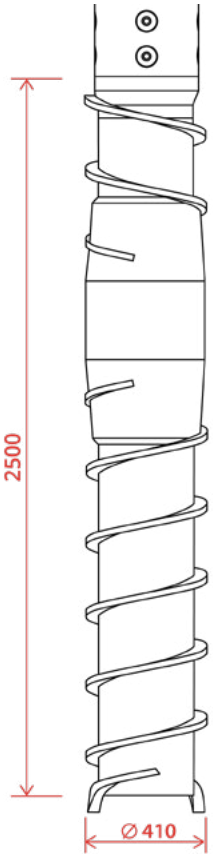
OLIVIER Ø41

Between 500 & 600 mm friction means that only 500 - 600 mm gets hot and can wear off.



With one set of drilling pipes and one diameter of guide, all diameters of Olivier piles can be drilled.

TRADITIONAL FDP Ø41



3 m friction means that 3 m can heat up and wear off increasing the chance of concrete getting stuck.

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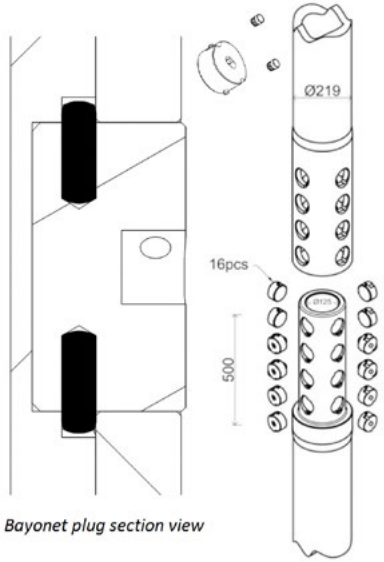
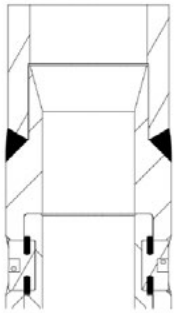
OLIVIER AUGER HEAD - Couplings



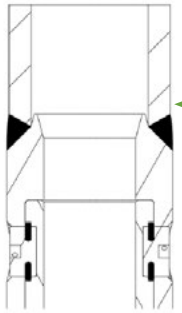
Bayonet plug section view

Available with seal for high-pressure grout injection

Press in pipe + weld



Welded to the pipe



Two types of welding connection

OLIVIER CD COUPLER

- Full round coupling (No Hex or Octagonal).
- Connected by a male and a female side that slide 500 mm and fixed with 16 bayonet plugs.
- No screw thread.
- Plug completely sealed from the inside of the drill pipe so no grout or concrete can escape.
- The coupling can always be disconnected, even after long periods of time.
- Designed to use in clockwise and anti-clockwise direction.
- Coupling has ± the same diameter as drilling pipe, so less wear.
- Available with seal for high-pressure grout injection.
- Plugs have the same outside radius as the coupler, so less wear.
- Applicable for various techniques: FDP, CFA, Soilmix, Geothermal, and more.
- The female connector is always on top (the female coupler can wear out, so there are always more auger heads than drill tubes provided. Auger heads have a male coupling, so there is minimal wear).
- Two types of welding connection.
- Coupling above the auger head works as an isolator,
- For dismounting: couplings can be rotated against one another after all plugs have been removed.
- High drilling torques, axial and radial forces

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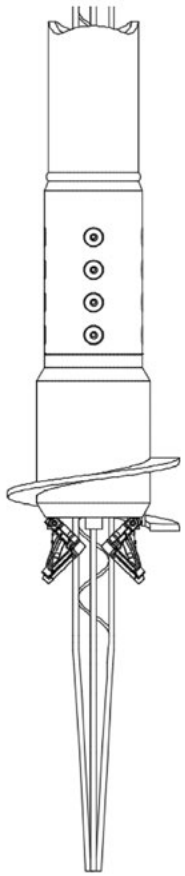
The new OLIVIER DPA, eliminates the need for grout injection in hard sand layers. With smaller pile diameters, such as 360 mm, larger reinforcement cages can be placed through the drilling pipe. This is made possible by using a feed pipe with a diameter of 324 mm along its entire length.

The patented flaps also ensure a more precise positioning of the auger head, therefore installing the reinforcement and pouring concrete is a breeze.

AUGER HEAD - Concrete System



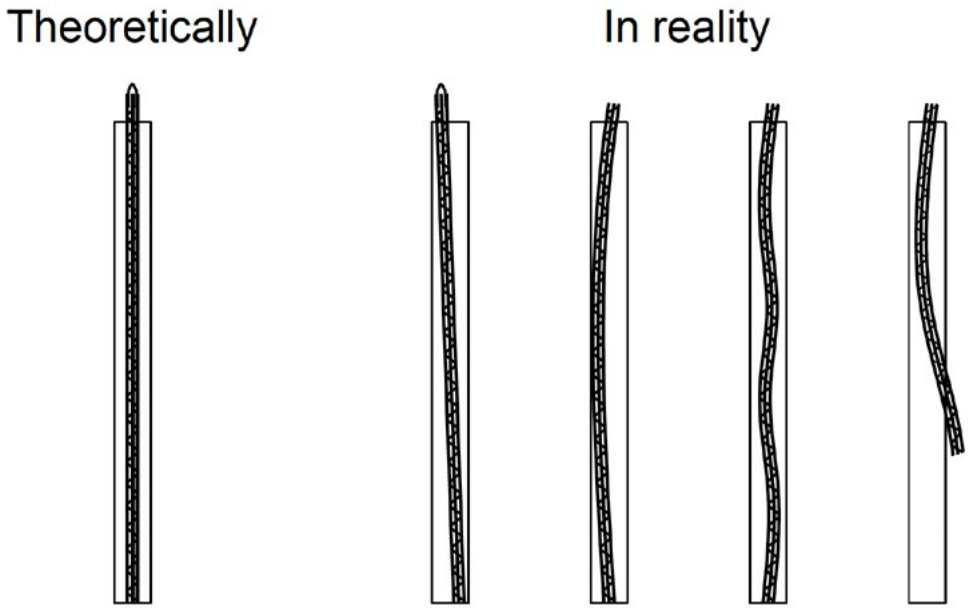
The OLIVIER Auger Head is designed for an open concrete system:

- Full length reinforcement and concrete are placed through the drill pipe and auger head.
- Use of gravitational concrete pressure.
- Large pile diameters enable large reinforcement cages.

Traditional FDP is a closed concrete system:

- In a closed concrete system, full length reinforcement is difficult to place because it has to be place afterwards. The soil on the sides can loosen during the placement of the reinforcement and get into the concrete.
- More expensive concrete is needed so that it stays fluid longer to get the reinforcement to depth.

This diagram shows the potential problems with placing the reinforcement afterwards:



OLIVIER PILE - Concrete Consumption

OLIVIER Pile
40% less concrete consumption because there is no concrete between the screws of the pile.

Olivier pile d41/61
Core Ø = 410 mm
Outside Ø = 610 mm
Concrete/m = 0,133 m³/m
Pile 12 m = 1,591 m³

Traditional FDP Pile
Concrete consumption according to the full outside diameter and length of the pile.

FDP pile d61
Outside Ø = 610 mm
Concrete/m = 0,292 m³/m
Pile 12 m = 3,507 m³

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OLIVIER

Displacement: 100% displaced to the bottom of the pile, so hardly any soil comes up with it when screwing back.

Spoil: Little or No soil comes to surface.

Pitch: When screwing back, a constant pitch is used, so no interruptions can occur in the pile concrete.

Grout Injection: Travels better through hard soil layers. If Grouting Injection is needed with other full displacement systems, it is not necessary with an OLIVIER Auger Head.

Piling Machine: Can be used big machines like Liebherr LRB355 and on small machines like Fundex CD20.

Machine Setup: With one set of drilling pipes, all diameters of pile can be made. Only one diameter of guide is needed. With one guide, all diameters of OLIVIER auger heads can be used.

Machine Torque: Possible with small machines from 10t/m drilling torque for smaller diameters.

Transport: Small auger head, length ±1m and weight 250kg to 2000kg so it can easily be sent by package services, such as DHL.

TRADITIONAL FDP

Displacement: Lower part is not displaced, which means drilling deeper.

Spoil: Soil on lower part of auger head comes back up to surface, which requires removal.

Pitch: No constant pull-up speed. Risk of interruptions in the pile if pulled up too fast.

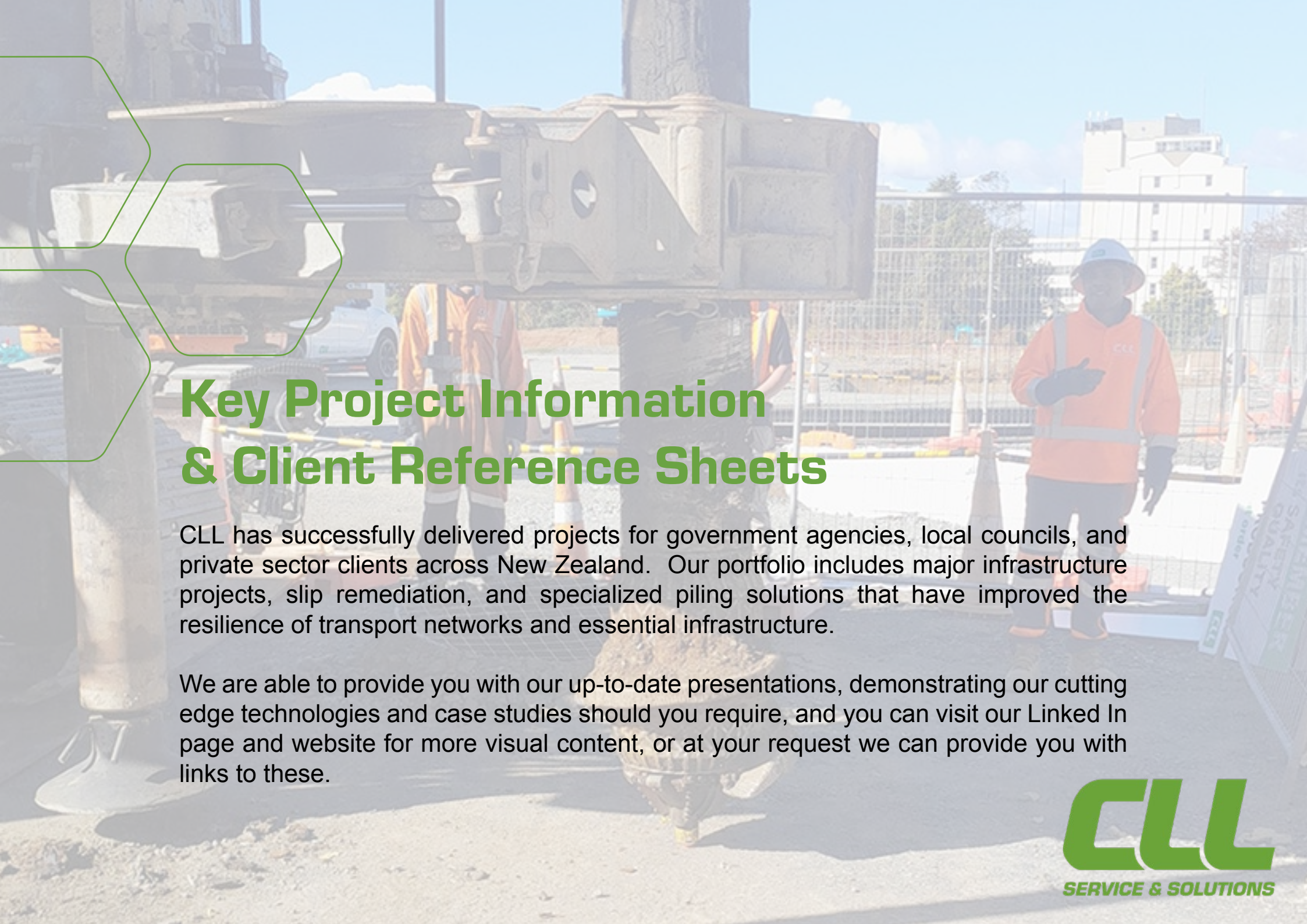
Grout Injection: Difficult to get through hard soil layers. Often Grouting Injection is used here.

Piling Machine: Used on large machines starting with a operating weight of 40t.

Machine Setup: For every diameter of auger a different guide is needed.

Machine Torque: Minimum 20t/m drilling torque required. More friction equals more drilling torque to get the auger head into the ground, which creates more friction, more wear and more fuel consumption.

Transport: Large auger head, length ±3,5m and weight 1500kg to 3000kg, so it requires truck transport.



Key Project Information & Client Reference Sheets

CLL has successfully delivered projects for government agencies, local councils, and private sector clients across New Zealand. Our portfolio includes major infrastructure projects, slip remediation, and specialized piling solutions that have improved the resilience of transport networks and essential infrastructure.

We are able to provide you with our up-to-date presentations, demonstrating our cutting edge technologies and case studies should you require, and you can visit our Linked In page and website for more visual content, or at your request we can provide you with links to these.

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PROJECT INFORMATION SHEET

80 MT WELLINGTON HIGHWAY

LOCATION	80 MT WELLINGTON HIGHWAY, AUCKLAND
CLIENT	SIMPLICITY LIVING
START & FINISH DATES	JANUARY 2024
VALUE	$5M

DESCRIPTION OF WORKS

CLL was approached for early advice to guide the foundation concept for the Simplicity funded Kianga Ora partnership for affordable housing. CLL assessed the Geotech fee proposals received to date by Simplicity and advised that there was a significant opportunity to save money if sufficient information about the soil structure was available. In the end, they recommended an additional scope for Geotechnical investigations which Simplicity agreed to carry out with haste. As a result of this, it became clear in the additional Geotech information that the originally assessed necessity for 40-50m deep piles for the 11-storey building did not apply.

The costs for the conventionally designed system of bored piles, pile caps, ground beams, hard fill, and reinforced concrete slab was in the order of 100% more expensive than the alternative developed by CLL with their designer CMW.

RIGID INCLUSION

Several other buildings are planned for this site, and they vary in height and load. All buildings will be founded on a GI type system at considerable savings to the project.

PROJECT INFORMATION SHEET

HOSPITAL ROAD

LOCATION	30 HOSPITAL ROAD, OTAHUHU, AUCKLAND
CLIENT	TE WHANAU O WAIPAREIRA TRUST
START & FINISH DATES	EARLY 2024
VALUE	CIRCA $1.7M

PROJECT OVERVIEW

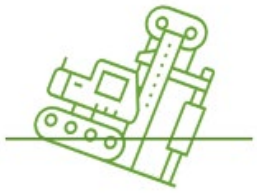
Initially, this project was developed at the design stage using 40-45m deep large diameter bored piles. The ground conditions were such that the piles needed to be constructed under bentonite or polymer. CLL was approached for pricing for this scope. During the pricing it became evident to CLL that GI should be investigated because there were significant cost savings. CLL requested a budget of 60K to carry out lab testing and seismic CPT testing. The budget approved and the testing confirmed that the foundation system could be designed as GI using Olivier Piles or both uplift and compression loads with a savings to the client in the order of 50% of the original piling cost.

RIGID INCLUSION

CLL in the previous 2 years had been approached by the European manufacturer of the Olivier system, with a view to adopting the Olivier system as part of its foundation offering. Olivier had noted that CLL were running a number of Liebherr rigs. Olivier and Liebherr had a history of working together as the Liebherr rigs suit very well with demands of installing the Olivier system. CLL looked at the pros and cons of bringing the Olivier system in New Zealand and assessed that the large capital outlay would be worth it in the medium-long term and therefore went ahead with the arrangement. The big advantages of Olivier over other displacement systems is that the steel may be installed prior to the concrete being poured and that for equivalent friction and end bearing capacities. The Olivier system removes 40% less spoil and uses 40% less concrete. This substantial price reduction enabled the client to remain within the budget constraints and to ensure the project's timely completion.

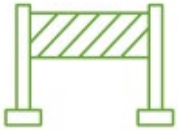
NON-NEGOTIABLES

NO LIFT IS TO BE DONE WITHOUT A LIFT PLAN IN PLACE



GEOTECH APPROVED PILING PLATFORMS MUST BE IN PLACE

NO MACHINE OR VEHICLE MOVEMENT WITHOUT A SPOTTER



ISOLATE PILING ZONE USING SIGNAGE AND BARRIERS

NEVER LEAVE OPEN HOLES UNCOVERED

DO NOT BREAK GROUND UNTIL PERMIT TO DIG HAS BEEN ISSUED

NO CELL PHONE USE WHILE DRIVING OR OPERATING

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CORE VALUES


Integrity
We are straight forward and ethical.
We are astute and considerate.
Courage
We take personal responsibility.
We are confident in our ideals.
Selflessness
We put service and people first.
We respect and share knowledge with each other.
We give others confidence and promote growth.
Innovation
We are strive to think, feel and act - rather than react.
Weare innovative and receptive to new ideas.
Respect
We have respect for ourselves, each other, our clients, the environment, and our plant & equipment.
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Northland Branch

Phone: 027 571 9111
Email: info@cll.net.nz
1945 SH10, Waipapa,
Far North District,
New Zealand

Auckland Branch

Phone: 09 412 7048
Email: info@cll.net.nz
14 Wookey Lane, Kumeū,
Auckland 0810,
New Zealand

Tauranga Branch

Phone: 07 281 0504
Email: info@cll.net.nz
3 Brook Street, Parkvale
Tauranga 3112,
New Zealand

Christchurch Branch

Phone: 021 928 748
Email: info@cll.net.nz
484 Johns Road, Harewood,
Christchurch 8051,
New Zealand

www.cll.net.nz

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