CLL Double Rotary CFA Technology

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CFA PILING

Continuous Flight Auger, sometimes known as auger cast piling, is a technique to create concrete deep foundations.

A continuous flight auger drill is the same length as the required hole depth, and concrete is injected through a hollow shaft under pressure as the auger is extracted.

Reinforcement is inserted after the auger is removed, creating a continuous pile without ever leaving an open hole. Fifteen years ago, CLL was introduced to CFA piling when visiting a contractor in Sydney. Soon after, we visited rig manufacturers in Italy, and our first CFA rig was soon on the water heading for Auckland.

DOUBLE ROTARY CFA

From the time we started with CFA it has always been the dream of the CLL team to get a double rotary rig because of the superior accuracy and speed that they enable.

About 7 years after introducing CFA, CLL bought a DR-CFA rig from Perth.

The technique is particularly valuable when constructing secant walls and the piles produced form a very accurate clean line.

Unlike conventional top-drive rotary rigs, a double rotary has two counter rotating rotary drives working simultaneously but in opposite directions.

The hydraulic top-drive rotates the drill string. The lower independent rotary drive advances a steel casing through unconsolidated overburden. This casing‘s rotation provides borehole stability.

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CLL DOUBLE ROTARY CFA

Pioneering Precision in Piling

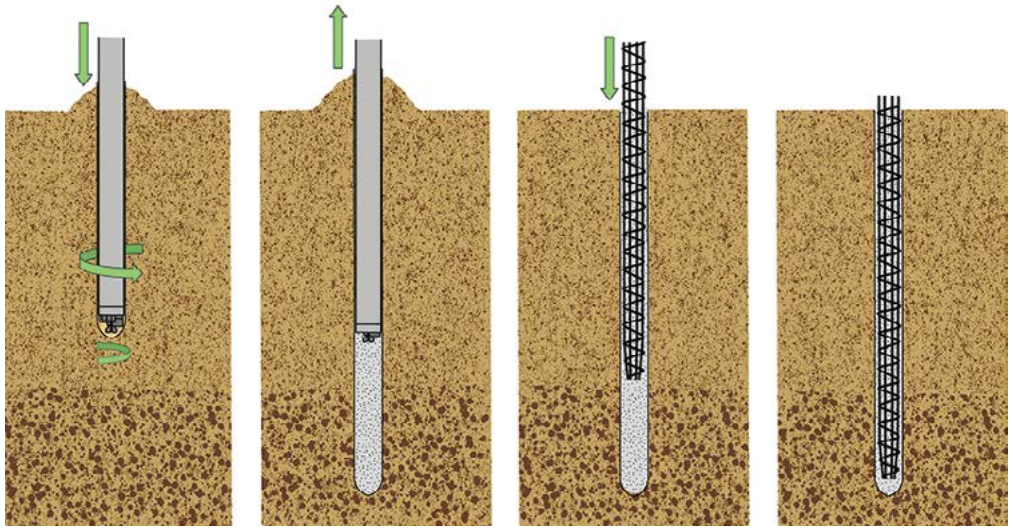
DOUBLE ROTARY CFA

1. Auger and casing drill simultaneously into the ground by rotating in opposite directions.

2. Auger and casing are extracted whilst concrete is pumped in through a hollow stem.

3. Reinforcement is then inserted.

4. Finished pile.



Benefits

- Removes Tags from tenders
- With good Geotech it can guarantee the price
- Eliminates cave-ins
- No requirement for insitu casings
- Eliminates the auger wanting to walk
- Close to 100% verticality
- 2.5 times faster than standard CFA
- High water table is not an issue

Why Double Rotary CFA?

The technique is ideal when constructing secant walls as the piles form a very accurate clean line.

Unlike conventional top-drive rotary rigs, a double rotary rig features two counter-rotating drives working simultaneously:

- Hydraulic Top-Drive – Rotates the drill string.
- Lower Independent Drive – Advances a steel casing through unconsolidated overburden, providing superior borehole stability.

This dual-action system eliminates the risk of soil flighting or decompression during drilling and ensures exceptional accuracy - a game-changer for secant walls and deep foundations that require a clean, precise finish.

The CLL Advantage

- **The only company in NZ offering Double Rotary CFA.**
- **Greater accuracy than traditional CFA.**
- **Faster installation without compromising quality.**
- **Unmatched stability in challenging ground conditions.**

At CLL, we don't just follow industry trends - we set them. With our exclusive Double Rotary CFA rigs, we're delivering stronger, smarter, and safer foundations for New Zealand's most complex projects.

PROJECT INFORMATION SHEET

CENTRAL INTERCEPTOR PROJECT

LOCATION	AUCKLAND
CLIENT	GHELLA
START & FINISH DATES	2020 - 2024
VALUE	$16M CIRCA

PROJECT OVERVIEW

The Central Interceptor Project is a critical sewerage infrastructure upgrade aimed at improving wastewater management in Auckland. Since August 2020, construction contractor Ghella engaged CLL, alongside a competitor, to construct secant walls for deep shaft access. Due to CLL's superior execution and quality control, we have since been entrusted with completing secant bored pile shafts at 13 diverse locations across Auckland. These locations include Miranda Reserve, Blockhouse Bay, Haverstock, Sandringham, Rawalpindi Reserve, Mt Albert, Western Springs, Norgrove, Mt Albert, Tawariki (Ponsonby), Keith Hay Park & Walmsley (Mt Roskill), Mangere Pump Station and Point Erin (Westhaven).

The primary objective was to establish lodging and receiving shafts for tunnel boring machines, vital components for the construction of a sewer line. The project entailed intricate foundation pile installations beneath proposed manholes and chambers, demanding precision and expertise. The construction process employed advanced machinery, the LRB355 drill rig and a 50t crane carrying out works at most of the sites.

Each location posed unique challenges, requiring secant bored pile shafts of varying depths and dimensions. Diameters ranged from 600mm to 1050mm, with specific sizes tailored to individual locations. Notably, Tawariki required three shafts, while Keith Hay Park & Walmsley necessitated two. The project employed the double rotary CFA (Continuous Flight Auger) method, a sophisticated technique renowned for its accuracy and efficiency, particularly in challenging geological conditions.

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PROJECT SITE SUMMARIES

May Road (Māngere East) - 2020

Scope of Work:

- Shaft A: 324 piles, 900mm diameter, 26.4m depth.
- Shaft B: 70 piles, 900mm diameter, 26.4m depth.
- CFA Double Rotary technique.

Performance: Successfully delivered dry shaft despite initial site challenges. Led to CLL securing additional work.

Miranda Reserve - 2021

Scope of Work:

- 68 piles, 750mm diameter, depths of 17-20m.
- CFA Double Rotary technique.

Performance: Successfully delivered with no remedial works required.

Western Springs - 2022

Scope of Work:

- 64 piles, 900mm diameter, 13m depth.
- CFA Double Rotary technique.

Performance: Two soft piles had minor soft spots, but no remedial work required.

Rawalpindi Reserve - 2022

Scope of Work:

- 52 piles, 750mm diameter, 16.5m depth.
- CFA Double Rotary technique.

Performance: One cage didn't reach bottom, but no remedial work required.

Keith Hay Park Deep Shaft - 2023

Scope of Work:

- Three shafts, varying from 15 to 34 piles, depths from 14.6m to 16m, 750mm diameter.
- CFA Double Rotary technique.

Performance: No specific issues reported.

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Walmsley Deep Shaft - 2023

Scope of Work:

- 134 piles, 750mm diameter, 19.5m depth.
- CFA Double Rotary technique.

Performance: No specific issues reported.

Tawariki (Ponsonby) - 2023

Scope of Work:

- Three structures, pile diameters from 600mm to 1050mm, depths from 8.5m to 20m.
- CFA Double Rotary technique.

Performance: Successfully delivered per specifications.

Mangere Pump Station (Māngere) - 2023

Scope of Work:

- 124 piles, 600mm diameter, depths of 12.5m-13m.
- CFA Double Rotary technique.
- Variation work added: 34 piles, 600mm diameter, 12.5m-13m depth.

Performance: Delivered per client variation request.

Haverstock Road - 2023

Scope of Work:

- 50 piles, 750mm diameter, 15m depth.
- CFA Double Rotary technique.

Performance: No remedial work required.

Point Erin (Westhaven) - 2024

Scope of Work:

- 68 piles, 900mm diameter, 24m depth.
- CFA Double Rotary technique.

Performance: Due to restricted access, innovative splicing methods were employed. Successfully delivered as planned.

PROJECT EXECUTION AND ACHIEVEMENTS

- Watertight Construction: CLL's expertise ensured high-quality, defect-free piles.
- Program Adherence: Each shaft was delivered on schedule, meeting project time-lines.
- Budget Compliance: All works were completed within budget.
- Client Trust: Consistently delivering quality results secured CLL's long-term partnership with Ghella.

CONCLUSION

CLL's involvement in the Central Interceptor Project highlights our ability to deliver high-quality, technically demanding foundation solutions. Our proven expertise in secant bored pile wall construction has solidified our standing as a trusted contractor in large-scale infrastructure projects, ensuring long-term partnerships and successful project outcomes as each job was completed to specification, on time, and within budget.

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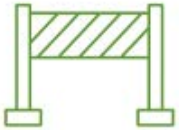
NON-NEGOTIABLES

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

CLL SERVICE & SOLUTIONS

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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