

# TIMBER POLE DEEP PILE FOUNDATION



## Dairy Factory Expansion, Paerata, Auckland, NZ

A Deep Pile Foundation was installed to provide the foundation for a concrete slab and silos for an extensions to an existing dairy factory.

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REVOLUTIONARY  
FOUNDATION  
SYSTEMS



DEEP  
PILE



GROUND  
IMPROVEMENT



RAFT

# TIMBER POLE DEEP PILE FOUNDATION

## Project background: Dairy Factory Expansion, Paerata, Auckland, NZ

- A foundation for an extension to an existing dairy factory was required.
- The site was located between existing buildings, with very tight access and operating area.
- The project was completed in 2017.

## Project challenge:

- The foundation needed to be able to support the weight of a concrete slab, and silos, and meet the regulatory requirements.
- H5 treated Radiata Pine timber piles were determined as the best solution to be installed down to the founding layer.
- There were multiple dense intermediate layers that had to be driven through.
- Piles had to be installed between adjacent buildings, but could not affect the integrity of these buildings.
- The site was only 12.0m wide which made handling 14.0m piles extremely difficult.
- Installation needed to be rapid.
- Due to space restrictions on site the delivery of materials needed to be carefully managed.
- Pile Driver Analyzing (PDA) testing to verify pile capacity needed to be carried out.

## The NZ Ground Control solution:

- MultiPole Uglie poles, 14.0m x 300-350mm, were identified as being able to satisfy the stringent design specifications of the Deep Pile Foundation required.
- The unique hollow core of the MultiPole allowed for fast installation via pile driving.
- The MultiPoles actually went deeper than expected – down to 17.0m. This meant additional pile length was required so extra piles were joined onto the top end of the 14.0m piles using MultiPole Connectors in order to meet the new 17.0m requirement.
- The joined MultiPoles were installed through the dense intermediate layers until the founding layer was reached.
- Once the founding layer had been reached the poles were cut off above ground at the level required for placement of the commercial buildings concrete slab.
- The subcontractor, Markovina Pile Driving South Island, installed the MultiPoles in close proximity to the adjacent buildings – some were placed as close as 600mm.
- In order to pick up extra end bearing capacity in one section the MultiPoles were installed large end first.
- Pile Driver Analyzing (PDA) testing for Dynamic Load was carried out to verify pile capacity, and a geotechnical ultimate load capacity of up to 860kN per pile was successfully achieved.

