

# CASE STUDY PACIFIC QUAY, GLASGOW



## PILING

### CLIENT

**Cala Homes**

### SCOPE OF WORKS

**CHD Piles  
Ischbeck Titan Micropiles  
Driven Steel Tubular Piles  
RBeam**

### ACHIEVEMENTS

**Completed on time  
Completed on budget**

## Project Brief

The Pacific Quay site sits to the south of the River Clyde, within the footprint of the former Prince's Docks and the 1988 Glasgow Garden festival. The scheme provides a new high-quality residential development of approximately 200 units, arranged in a collection of building elements that vary in form and scale to create an intimate community that connects to Festival Park within its industrial urban context.

Roger Bullivant Limited (RBL) were employed to undertake:

- 300/600mm dia Continuous Helical Displacement piles and 25 No Ischbeck Titan Micropiles to support the flatted blocks.
- 300/600mm dia Continuous Helical Displacement piles and 178mm dia Driven Tubular Steel piles followed by our RBeam Precast System to support the low rise houses.

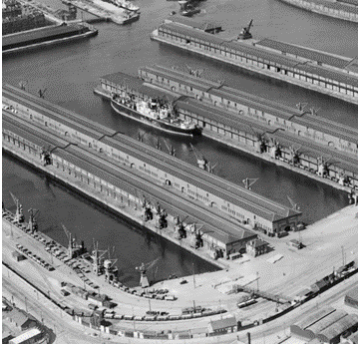


**ROGER BULLIVANT**

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## Key Issues/Requirements

- RBL were required to provide a design methodology to suit the underlying ground conditions using both information provided by the client, along with our local knowledge and extensive experience working in the area. The ground conditions comprised an upper covering of made ground, overlying loose silty sand, underlain by medium dense sand. In addition, the site lies within an infilled dock with existing historical dock walls.
- Several piles within the flatted blocks were located in close proximity to the existing historical dock wall. This prompted consideration of a suitable piling technique and system to pile through the previously infilled dock adjacent to the existing historical dock wall.
- Flatted Blocks; maximum SLS loads of 500kN
  - 300/600mm dia Continuous Helical Displacement piles
  - Ischebeck Titan Micropiles to support the flatted blocks.
- Low Rise Houses; maximum SLS loads of 300kN
  - 300/600mm dia Continuous Helical Displacement piles
  - 178mm dia Driven Tubular Steel piles
  - RBeam system to support the low rise houses

## Solution

- For all areas outside the infilled dock / dock wall, RBL installed our Continuous Helical Displacement (CHD) piles to design depth for compression loads up to 500kN.
- The CHD piling system was selected as it generates negligible levels of noise and vibration, whilst creating no appreciable arisings meaning there is minimal spoil to remove from site. The pile is formed using a highly efficient multi-flight bullet ended shaft, driven by a torque rotary head, enabling penetration of the strata without bringing material to the surface. Data is recorded using computerised instrumentation. Nominal surface heaving may occur but compared with the arisings from CFA boring, the volume is negligible.
- To overcome the issues of the existing historical dock wall, RBL installed Ischebeck Titan Micropiles. The pile consists of a continuously threaded, hollow stem steel reinforcement tendon combined with an OPC grout body. The profiled surface of the grout body transfers compression forces into the ground. All pile positions were formed by installing a 220mm dia permanent casing through all overburden material, terminating on the top of the dock wall. Piles were subsequently open holed drilled through the existing dock wall using a 190mm dia rotary percussive air flushed drilling system. Following the installation of the casing / open hole drilling, Ischebeck Titan 73/45 Micropiles were drilled to design depth.
- To overcome the issues of the infilled dock, we installed 178mm dia Driven Tubular Steel piles to design depth.
- Maintained load testing was undertaken on all pile types, achieving the requirements of the Client's specification.
- RBeam is certified under ISO 45001: 2018, ISO9001:2015 and ISO 14001:2015



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↘ The RBeam system comprises five types of beams in a range of standard lengths allowing our in-house design team to produce highly efficient foundation solutions for any project. A precast ground beam system decreases the time needed to construct foundations and reduces wastage compared with trench fill foundations. RBeam precast foundations are one of the most versatile and highly efficient foundations solutions on the market. A value engineered design system tailored for the specific projects ground conditions and requirements. The modular foundation system is designed, manufactured, and stored at RB's state-of-the-art manufacturing facility in South Derbyshire.



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