



hiperpile™

Project Profile

DfMA Demonstrator
East London



Redefining sustainable construction



A Hiperpile trial installation project was completed in early 2023 to advance the pre-cast manufacturing methodology and installation methods to include installation under polymer support fluid.

The installation of a single test pile, consisting of 11Nr precast units, of which 9Nr were unreinforced hollow sections and a solid reinforced top cap and a solid base. The pile was designed to accommodate a test load of 10MN. The pile was constructed through varied geology, including RTD, LCF, Harwich / Woolwich Formation, the Lambeth Group, Upnor Sands and founded in Thanet Sand. The precast units were each positioned at casing level, before being lowered and released at depth within the pile bore. Continuous reinforcement strands, connecting the units from the top to the cap, were then stressed and finally the annulus was grouted to pile cut off level.

Hiperpile DfMA demonstrator

- 900dia HIPER® pile, drilled to 41m
- Constructed using 4.1m long precast units
- 800dia precast segments, 400dia void
- Unreinforced precast units
- Bending capacity transferred across the joints through prestressing strand that run along the length of the pile
- Pile was expected to fail around 8.5MN, however it continued to hold the load up to the 10MN frame



Key Benefits

- Embodied carbon saving of 25% compared with a traditional solid pile of equal dimensions
- 78% reduction in the volume of fresh concrete delivered to site; 20% total reduction in concrete volume
- Structural integrity of pile is guaranteed from the precast unit
- 15% reduction in muckaway vehicles, and a total 10% reduction in all HGV movements
- This precast hollow pile construction method does not rely on large plant or high capacity working platforms
- A 50% embodied carbon savings could be achieved by utilising zero-cement concrete replacement products

