

Darling Harbour Live

Sydney, NSW

A design and construct micropile solution was adopted to support to support 2600kN Ultimate loads.



The project

Darling Harbour is the location of Sydney's the newly rebuilt international convention centre. Part of the re-development retained two levels of existing car parking, above which new structures increased the foundation loads, necessitating the strengthening of existing footings.

The challenge

Ground conditions beneath the site were complex, with several metres of fill and loose and soft soils over sandstone, which had a strength of 30MPa to 40MPa, with rockhead varying between 16m and 25m below the floor slab. Piles were founded in the sandstone with rock sockets of between 1.5m and 3m, depending on load requirements.

The solution

Keller used its low headroom drilling rig to install the piling, in places having to excavate pits to ensure the mast could be raised beneath overhead services. Piles comprised 1m lengths of 244mm diameter threaded permanent steel casing which provided stability to the bore, as well as structural capacity. Casing was installed in a 300mm diameter borehole and grouted with 40MPa fluid grout before the pile was cast. Rock sockets were formed using Keller designed sacrificial drill bits. This efficient technique had negligible impact on the surrounding structure and minimised disruption to other contractors on site.

Project facts

Owner(s)

Lend Lease

Keller business unit(s)

Keller Australia

Main contractor(s)

Lend Lease

Solutions

Underpinning

Markets

Commercial

Techniques

Micropiles