

Adult Mental Health Unit St. Mary's Road, Southampton

Project Description

The AMHU is an extension to the existing Royal South Hants Hospital in Southampton.

The topography of the site was such that to enable construction of the lower ground floor level an earth retention system was required.

Due to the absence of ground water and the adoption of the retaining system in the permanent works a contiguous wall was chosen.

Ground Conditions

The soil profile consisted of up to 5m of fill material overlying sand interbedded with bands of clay. As the depth of the clay bands varied the piles were designed as predominantly skin friction piles in order to avoid a reliance on the pile end bearing in to the sand.

Solution

450 and 600mm diameter continuous flight auger (CFA) piles were installed at 600 and 750mm spacings using a Soilmec CM50 and CPL CFA piling rig. This formed a retaining wall supporting 4.5 to 6m of soil.

In addition 400 and 450mm CFA bearing piles were installed to support the building and tower crane loads.

The design to accommodate the compression load, based on a factor of safety of 2.5, was verified by 4 working pile load tests. The maximum pile settlement at a working load of 800kN was shown to be less than 5mm.



Exposed secant wall

Client

NHS

Main contractor

Osborne

Structural engineer:

Thomasons

Scope of works

- 430 no. 400mm Diameter Cfa Bearing Piles to 24m
- 311 no. 450mm Diameter CFA Contiguous and Bearing Piles to 14m
- 11 no. 600mm Diameter CFA Bearing Piles to 12m

Plant

- Soilmec CM50 40t CFA Drilling Rig
- CPL 40t CFA Drilling Rig
- 2 no. 7m³ Hymix Concrete Agitators
- 2 no. Putzmeister 2005 Concrete Pumps

Duration

July To September 2008