CASE STUDY

RAMSDEN HALL ACADEMY, BILLERICAY

PILING

CLIENT

Department of Education

MAIN CONTRACTOR

Morgan Sindall Construction

SCOPE OF WORKS

CDA piling

Project Brief

Roger Bullivant (RB) was approached by Morgan Sindall Construction to develop the most cost-effective piled solution for the redevelopment of Ramsden Hall Academy.

The Academy provides specialist teaching for year six and secondary age male students with educational health care and social-emotional and mental health (SEMH) special education needs.

The scheme consisted of an extension to the existing teaching block and erection of a new replacement residential accommodation block which will hold 40 beds and enable the development of its pupil's independent living skills.

PILING

Key Issues/Requirements

- RB were instructed to install 410no. loaded bearings piles with loads ranging from 250kN-350kN, with 15kN horizontal.
- Our client required an engineering solution that provided cost savings as well as a reduction in the programme.

Solution

- Typically, a CFA solution would have been the traditional solution for a project with the following ground conditions: made ground (granular) overlaying firm to stiff clay with infrequent bands of sand.
- RB proposed a solution combining the use of our in-house Continous Displacement Auger (CDA) technique and traditional CFA piles in sensitive areas.
- The CDA piles were to up 40% shorter than the equivalent CFA piles (7.5m vs 12m). This had several benefits including:
    - A reduction in the volume of concrete required over 40%, the associated reduction in concrete deliveries, and environmental impact.
    - A reduction in programme of over 35% in comparison to a pure CFA solution.
- CDA piles displace soil laterally in the ground during the installation process rather than flighting soil surface which created a saving of 430m3 of muck away from site.
- In addition, the piles were designed to heave considering the desiccation depths shown on the tree constraints survey and rationalised in two groups: desiccation depth of up to 2m and desiccation depth up to 3m.
- Where the piles were located close to sensitive structures or assets, the piles were installed using the traditional CFA technique. Our RBL in-house designed rigs have the capabilities to switch between two installation techniques and install these piles where required without any further plant needing to be mobilised to the site.
- The design required 5No. CDA piles to be statically load-tested, these tests were carried out using our in-house capabilities. The results from these tests, of less than 2mm settlement at SWL, demonstrated the CDA pile performance to be better than that of an equivalent CFA pile.

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