

Large Diameter Bored Piling

University of Glasgow

STRATHCLYDE, SCOTLAND



Retaining Wall and Foundations for Biomedical and Cardiovascular Research Centre

Design and Construction Methods

The job was constructed in two phases: firstly, the contiguous piled wall was formed around the perimeter of the site using 600mm & 750mm diameter rotary piles. The wall was designed as a cantilever wall in the temporary case and as a propped wall in the permanent case. The cantilever design allowed for clear unobstructed excavation of the basement without the need for propping or internal bracing. The design allowed for the wall to be propped by the basement slab in the long term. Piles were typically 9.0m deep, founding in the mudstone and sandstone. Piles were



Piling Rig at University of Glasgow

CLIENT:	University of Glasgow
MAIN CONTRACTOR:	HBG Construction
CONSULTING ENGINEER:	Halcrow
DURATION OF WORKS:	12 weeks

WORKS QUANTITIES

No. of Piles	300 no. 750mm diameter. Piles and 32 no. 600mm diameter. Wall piles; 200 no. 600mm bearing piles.
Max Depth	Average depth 9.0m

constructed with a short length of temporary casing which was screwed into the Glacial Till. This first phase of work was completed using 2 heavy duty hydraulic Bauer rigs. These heavy duty rigs made light work of the boulder obstructions and long sockets which were formed in the strong rock.

A capping beam was constructed onto the piles prior to the bulk excavation. BSL returned to site upon completion of the bulk excavation to install the remaining bearing piles from the reduced level. BSL undertook complex pile group design in the areas of the heavily loaded cores of the building. All bearing piles were 600mm diameter with a maximum working load of 2200kN. The works were phased closely with the main contractor and other trades to ensure the optimum programme was achieved.



Contiguous Piled Wall – 750mm diameter at 900mm centres

Special Considerations

Throughout both phases BSL complied with the restricted working hours and restricted delivery periods on this site, which was bounded by residential properties. Piling works were carried out strictly between the hours of 08:00 and 18:00. Owing to a planning restriction, the site was unable to take deliveries before 09:30hrs or after 16:00hrs. As a result, careful planning was needed on a daily basis to maximise the production and schedule deliveries within the restricted hours.

Ground profile

The general sequence of strata on the site was fill overlying Glacial Till, overlying weak to strong mudstone and sandstone. Numerous large boulder obstructions were encountered in the Till and these were rapidly cored through with the heavy duty hydraulic piling rigs.



Core of a Boulder