



Ibis Hotel, SoCo, Edinburgh

LOCATION	Edinburgh City Centre
REQUIREMENT	Bearing piles for nine storey multi use development
TECHNIQUES	Rotary Bored and Drilled
MAIN CONTRACTOR	McAleen and Rushe Limited

Project Overview

Following the completion of a substructure value engineering exercise, Technik Ground Solutions Ltd was awarded the contract for the design and installation of permanent bearing piles. The works were carried out at the former Edinburgh Festival venue on the junction of the Cowgate and South Bridge in Edinburgh's City Centre. The gap site had previously been vacant following the demolition of the previous building due to fire damage. The site will be transformed into a nine storey, multi-use development including retail units, residential apartments, a nightclub and an Ibis Hotel.

The relatively restricted site was bounded by the gable walls of two historic masonry buildings and the relatively sensitive vaulted construction holding up South Bridge to the east.

The works included the provision of 110 vertical bearing piles carrying working loads of up to 2800kN.



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Project Challenges

- Column layout required piles to be installed at up to 750mm from the centre line of the piles to existing vertical faces of existing structures.
- Sloping rockhead and bedrock of varying composition and strengths required multiple pile diametres and installation systems.
- Sensitivity of adjacent structures to vibration which required vibration monitoring to be carried out constantly throughout the pile installation works.
- Restricted site with tight access requiring careful planning with regard to material storage, concrete deliveries and spoil management.

Solution Delivered

TGS was able to provide a solution comprising a combination of 300mm diameter temporary cased, drilled piles and 600mm diameter auger bored piles. Both pile types were installed using the same minipiling rig which was converted from auger mode to drill mode on site during the works.

On the side of the site where the bedrock comprised of weak to moderately weak mudstone, 600mm diameter piles were installed using rotary techniques. Sockets of up to 4 metres were formed using rock ripping augers on the very high power, high torque minipiling rig. These piles were concreted using the hollow stem augers before the reinforcing cage was inserted into the bore.

Where the underlying bedrock comprised of moderately strong to strong sandstone, on the opposite side of the site, 300mm diameter temporary cased drilled piles were installed using rotary percussive techniques. Sockets of up to 6 metres were formed using a down the hole hammer with air flush. On completion of the drilling the pile bore, these piles were grouted using a tremme before inserting the reinforcing cages.

During the drilling works, additional precaution measures were taken to suppress the dust and contain the air borne arisings from the busy Cowgate roadway and pavement.

Both pile types were static tested and proven to 150% of the safe working loads by an independent testing specialist. In addition to the load tests, all of the augered piles were integrity tested to ensure no defects were present in the base and shaft of these piles.



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