

# Piling Equipment Specialists

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Early in 2020 ABI Equipment Ltd were contracted to supply a Delmag RH28 drilling rig, plus BT340 rotary head, to their colleagues at Keltbray, for works in central London.

The site located at the junction of Finsbury Pavement with Ropemaker Street, encompasses 4 buildings in all – Arbutnot House on Ropemaker Street, Finsbury Court to the rear of this, and two further street-facing blocks on Finsbury Pavement and Finsbury Street. Demolition of these buildings was completed in February, and the end of that month saw the arrival of our rig for the next stage of the development – the foundations and substructure installations.

The new construction is a multi-height building, the tallest point being 128m above street level, with up to 3 basement levels, and 22 above ground storeys. It provides in excess of 400,000 ft<sup>2</sup> of premium office space (a rental agreement with a major global law firm has already been secured) plus around 12,000 ft<sup>2</sup> of retail space and 5 accessible roof terraces totalling 20,000 ft<sup>2</sup> in all.

As with any urban redevelopment site, existing substructures, services and utilities needed to be factored in to the groundworks and excavations. Being in the heart of our capital, this location was close to both Network Rail and Crossrail stations at Moorgate, the London Underground Northern Line tunnels and pedestrian corridors, and Thames Water mains and sewerage tunnels. In fact there are major infrastructure assets below all three streets that border the site (see graphic).

## Basement Walls Construction, Central London

**Client:** Keltbray

**Equipment:** Delmag RH28 rig  
+ BT340 rotary head

**Technique:** Secant Piling



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The impact on these assets had been thoroughly assessed and continued to be monitored at various stages during the project. Site specific investigations were carried both before and after the demolition phase, as well as condition surveys, and these took place again once the piling and excavation stages had been completed.

Although some of the foundations for the demolished buildings on the east side of the site were shallow strip foundations and therefore not suitable to support the new construction, it was decided to leave these in place and install the new foundation piles within the existing building footprint. The single basement level here has remained as such, being deepened slightly but was constrained by the Underground and Crossrail tunnels directly adjacent. The remaining central and west side of the site comprises new secant piled perimeter walls topped with a capping beam to retain the newly excavated lower basement levels. The new building's foundations also have new internal load bearing piles, and a piled raft foundation to the lower basement level. This stepped basement solution was agreed to minimise impact to the nearby below ground assets.

The secant wall was decided upon over possible contiguous or diaphragm walls because of its integral strength and water retaining properties. It is constructed in situ, with the boring of intersecting re-enforced piles, prior to excavation. The intersecting piles provide greater stability and are favoured in areas with a high water table (such as this). The installation process also produces less disturbance and vibration than other methods.

Artist's impression of finished building:



Below-ground infrastructure borders the site:



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Once the foundation installations were completed the main construction work could begin. It was decided that a 'bottom up' method would be used rather than 'top down' because of the tight nature of the site, the restricted access, and the construction methods being employed.

The Delmag RH28 rig supplied by ABI was required for the installation of  $\text{\O}1180\text{mm}$  piles to a depth of 40m for the formation of the secant wall foundations.

