

Specialist Press Release

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Elizabeth Line in London begins operation – Bauer substantially involved in the construction of three stations

London, UK – After multiple years of construction and an extensive period of trial operation, it's finally time: On May 24 London's Elizabeth line (formerly Crossrail) was formally opened. The Elizabeth line will increase central London's rail capacity by 10 per cent and is more than 100 km long with new trains operating in 42 km of new tunnel and track under central London, connecting 41 stations and bringing an additional 1.5 million people within 45 minutes of London. BAUER Technologies Ltd., the UK subsidiary of BAUER Spezialtiefbau GmbH, was substantially involved in the foundations for the enabling work packages for three stations: Tottenham Court Road station, Moorgate shaft at Liverpool Street Station and Whitechapel Station.

In December 2009, the joint venture Bauer Keller was awarded the contract to carry out the foundation work as part of Tottenham Court Road Station project which included structures for both London Underground and Crossrail. The work was executed from April 2010 to September 2011 and included the construction of 10,000 m² of secant pile wall, 6,437 m² of diaphragm wall and seven permanently cased piles of varying lengths, diameters and levels of difficulty.

The largest casing diameter was 2.43 m, while the largest drilling diameter was 2.03 m. The deepest pile was installed at a depth of 64 m. A BAUER BG 40 and a BG 28 were used. One particular challenge was the extremely cramped spatial conditions: after all, the construction site was in the centre of London. In addition, pile construction in the immediate vicinity of operational tunnels for the Northern line required the Bauer team to rely on many years of expertise and sharp intuition, including a real first in that one of the permanently cased piles had to be partially (i.e. to a depth of 36 m) constructed in a D-shape, due to an adjacent escalator box structure.

In February 2012 Bauer began foundation work on Moorgate Shaft at Liverpool Street Station. Before the main piling work could start, Bauer first had to remove 25 existing piles, which were 34 m deep, with a maximum diameter of 1350 mm, which included the removal of two existing piles with permanent steel liners. The challenge here was not only the spatial restrictions in the centre of London's financial district, but also the strict noise control regulations on the site. On top of this, it was necessary to minimize vibrations and any resulting disruptive effects on underlying subway tunnels, pipework or adjacent buildings.

The core of the specialist foundation engineering work for the Moorgate Shaft was the construction of a 60 m deep shaft. The required diaphragm wall elements, up to a depth of 53 m, were constructed using a BAUER MC 64 duty-cycle crane equipped with a

grab. In addition, Bauer constructed three 60 m deep piles with a diameter of 2.4 m for the subsequent above-ground buildings as well as eight barrette piles up to a depth of 60 m. In August 2013, the team from Bauer Technologies completed their work on the Liverpool Street's Moorgate Shaft.

In February 2012, Bauer also began foundation work for the Whitechapel Station upgrade project. Here as well, extremely tight working spaces and access options made the project a complicated logistical puzzle. By May 2013, Bauer had constructed a total of 13,000 m² of diaphragm wall and barrette piles to a depth of up to 51 m for two shafts. Among other equipment, a BAUER MC 64 duty-cycle crane with grab was used for this work. Connecting the complex reinforcement cages and installing the large volumes of concrete that were required for each diaphragm wall element posed a major challenge.

"We are delighted to have been able to make a contribution to what is currently the most significant infrastructure project in London", says Michael Jones, Managing Director of BAUER Technologies Ltd.

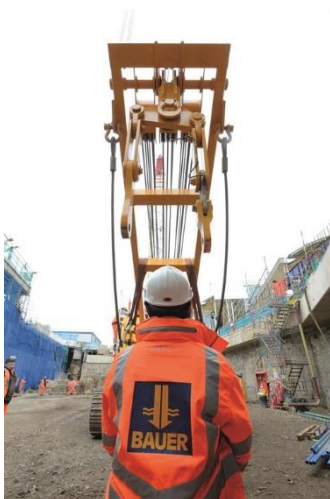
Images: 2022-05_BAUER_Elizabeth_Line



(1) Flashback: For the Tottenham Court Road Station, Bauer constructed 10,000 m² of secant pile wall, approx. 6,400 m² of diaphragm wall and seven cased piles up to a depth of 64 m.



(2) The core of the specialist foundation engineering work for the Moorgate Shaft at Liverpool Street station was the construction of a 60 m deep shaft.



(2) For the Whitechapel Station Upgrade project, Bauer constructed a total of 13,000 m² of diaphragm wall as well as barrette piles to a depth of up to 51 m for two shafts.

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About BAUER Spezialtiefbau Group

BAUER Spezialtiefbau GmbH, the original parent company of the BAUER Group, has been a major driving force in the development of specialist foundation engineering. It carries out all of the customary processes of foundation engineering, primarily for excavation pits, foundations, cut-off walls and ground improvements on a worldwide basis. In doing so, BAUER Spezialtiefbau GmbH works closely together with their over 50 subsidiaries and branches across the globe. Regional networks around the world allow for the quick and flexible application of machines, teams and expertise. Bauer Spezialtiefbau offers their customers individual, creative and economical specialist foundation engineering solutions for demanding construction projects, from planning through to execution. More at bst.bauer.de

About Bauer

The BAUER Group is a leading provider of services, equipment and products dealing with ground and groundwater. With over 110 subsidiaries, Bauer can rely on a worldwide network on all continents. The Group's operations are divided into three forward-looking segments with high synergy potential: Construction, Equipment and Resources. Bauer profits enormously from the collaboration of its three business segments, enabling the Group to position itself as an innovative, highly specialized provider of products and services for



demanding projects in specialist foundation engineering and related markets. Bauer therefore offers suitable solutions to the world's greatest challenges, such as urbanization, the growing infrastructure needs, the environment, as well as water, oil and gas. The BAUER Group was founded in 1790 and is based in Schrobenhausen, Bavaria. In 2020, it employed about 11,000 people in around 70 countries and achieved total Group revenues of EUR 1.5 billion. BAUER Aktiengesellschaft is listed in the Prime Standard of the German Stock Exchange. More information can be found at www.bauer.de. Follow us on [Facebook](#), [LinkedIn](#) and [YouTube!](#)