South Bank Quay, Teesside

The South Bank Quay is part of the Teesworks Freeport project, which secured £107million in the UK Investment Bank's first ever investment. With immediate access to the River Tees and the North Sea, the 1km quay will provide global firms with 500 acres of development land.

The zone is primely positioned for activity relating to Dogger Bank - the world's largest offshore wind farm, located 60 miles off the Northeast coast. Already, Korean steel manufacturer SeAH Wind Ltd's £400million offshore wind monopile manufacturing factory has begun construction on South Bank, and it is expected that South Bank will house up to three manufacturers to support the development of next-generation offshore wind projects.

Main contractor GRAHAM, on behalf of client Teesworks, appointed Bauer Technologies to undertake the piling and foundation works for the project. Specifically, Bauer Technologies, constructed the 156nos King Piles required to form the new quay wall.

Due to the complexity of the ground, with strong sandstone at depth, the king piles could not be conventionally driven into the ground, instead they had to be placed into a pre-bored hole. In order to achieve this Bauer had to install up to 18m of 2130mm segmental casing, followed by the underlying sandstone being bored to depth, using 2000mm diameter heavy duty rock drilling tools. Once the bore was complete the 1800mm diameter king pile was placed into the bore, with the bottom 6m set into concrete to provide a toe fixity. The annulus was backfilled with a pea gravel, before casing extraction.

Bauer also installed some 570no. 880mm diameter rotary bored pre-bores for the sheet pile infill wall. For the anchor wall, Bauer installed 915no. 600mm diameter CFA pre-bored piles for sheet pile anchor wall.

As part of the new quay development GRAHAM had to construct a heavy lift platform. This platform will be used in the future to lift the biggest monopiles in the world onto barges. For the heavy lift platform, 670no. rotary bored bearing piles, with lengths of 18m to 27m and diameters 760mm and 900mm were installed, as well as 7no. for the static pile load test.

A complex project, Bauer Technologies had many challenges to contend with, including adverse weather conditions, with often high winds effecting the many lifting operations. The ground conditions were also challenging, requiring long temporary casings to be installed for the king pile installation.

With the project requiring as much as 400m^3 of concrete per day, at full operation, there was also considerable demand on the local concrete suppliers to meet this need.

Despite the many challenges and the scale and tight schedule of the works, the project, which commenced on the 17 January 2022, was completed successfully on the 17 March 2023, on time, on budget and to the full satisfaction of the client.

Principal Contractor:
GRAHAM

Piling Contractor:
BAUER Technologies Limited

Contract Period:
17 January 2022 to 17 March 2023

Bauer's Scope of Works:

- 156nos King Piles, length of 20m to 28m and diameter of 2130/2000mm
- Sheet pile infill wall, 570nos rotary bored piles, 880mm diameter piles to 24m
- Heavy lift platform, 670nos rotary bored bearing piles, diameters of 760mm and 900mm, length of 18m to 27m.
- 7nos of static pile load test
- Sheet pile anchor wall, 915nos CFA pre-bored piles, 600mm diameter to 16m

Equipment Used:

- 3 x BG45 drilling rig
- 2 x BG30 drilling rig
- 2 x FD200 CFA drilling rig
- 5 x crawler cranes 80-350ton capacity

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