

PROJECT: NEW TYNE CROSSING TEMPORARY PILING WORKS

VALUE: £6M
ROLE: SUBCONTRACTOR
START DATE: APRIL 2008
COMPLETION: OCTOBER 2009

CLIENT: BOUYGUES TRAVAUX PUBLICS
HOWDON YARD
WALLSEND
NE28 6UL

- 3,500m of tubular piles
- 11,500m of sheet piles
- 24no 20m long tie bars
- 14,000t of imported stone

TENDER

As part of the £250M New Tyne Crossing scheme Southbay were awarded the sub contract for the installation of piles as part of the temporary works required to shore the banks of the River Tyne during dredging and installation of the tunnel. The Main Contractor Bouygues TP Ltd awarded the sub contract to Southbay in May 2008 following an earlier tender period where Southbay provided the most cost-effective solution to the tendered documents. This was followed by 4-month period of value engineering where a further saving of £1M was achieved. Final contract price was £2.2M.

Southbay, Bouygues and their consulting engineer W.A. Fairhurst & Partners reviewed the scheme and reduced the cost by the following methods:

- Identifying the most economically advantageous supply of steel tubes and sheet piles and purchasing to suit the requirements of the programme.
- Alternative steel sheet piles from Japan were incorporated into the scheme. In addition to being competitively priced the excellent quality in terms of rolling tolerances meant installation costs were also reduced.
- Cost of suitable heavy craneage negotiated to a minimum with the suppliers.
- Providing Bouygues with an 'Open Tender Book'. Southbay provided all the information to Bouygues clearly showing the build-up of the tender with all plant, permanent and temporary materials, labour, overhead and risk. This was then discussed item by item and provided Bouygues the confidence that Southbay had the resource available for the scheme.



North Bank, west elevation showing piles in position



Tyne Dock Weir Wall was constructed with Southbay resources working from floating plant



80t crane working off a barge to install mooring piles

CONSTRUCTION

Strict environmental conditions were imposed by the Environment Agency and MMO license, full compliance with these was achieved.

North Bank

Enabling works included demolition of an existing concrete pavement and revetment followed by the deposition of approx. 8,000 tonnes of stone in the river to provide a working platform. This was followed by the installation of a sheet pile wall driven through the deposited stone to act as a cut off for bentonite being used in the diaphragm walls. To permit the main dredging work the next operation was the installation of the temporary retaining wall which consisted of a combi wall made up of 84 no. 1067dia piles 32m long with 1, 2 or 3 20m long intermediate sheet piles. The total length of the retaining wall was 200m. Piles were installed using both 110kNm and 220kNm energy hammers. Combi wall piles were anchored back either to anchor piles with a proprietary 'Macalloy' tie bar or, where up against the existing quay a specially designed heavy steel bar fixed to the existing concrete structure.

South Bank

Enabling works included the deposition of approx. 6,000 tonnes of stone prior to create a working platform. Approx. 80ln.m of combi wall were installed using the 220kNm energy hammer but for 6 no. piles adjacent to the deepest section of dredge this was found to be inadequate. Southbay located the largest hammer available in the country at the time (after also making enquiries in Europe) and a 300kNm energy hammer was mobilised to site. Southbay worked the Christmas holidays to ensure the programme was maintained for the Client.

River Tyne Mooring Piles and Tyne Dock Weir Wall

Southbay further negotiated with Bouygues an additional contract, the installation of 5no. mooring piles in the River Tyne. Southbay used our own crawler crane on a barge and a tug to install the piles. The piles were successfully installed to high tolerances both in plan position and verticality which was critical for the installation of the tunnel segments. Tyne Dock Weir Wall involved the construction of a 180m long piled wall working from floating plant. This wall consisted of sheet piles connected to a waling beam in turn supported by steel tubular piles. The wall acted as a weir to prevent sediment washing into the River Tyne during the filling of Tyne Dock.

PROGRAMME

The works were carried out first on the North Bank lasting 15 weeks and then remobilising all resources to the South Bank for a further 10 weeks. The works were complete on programme and to budget.