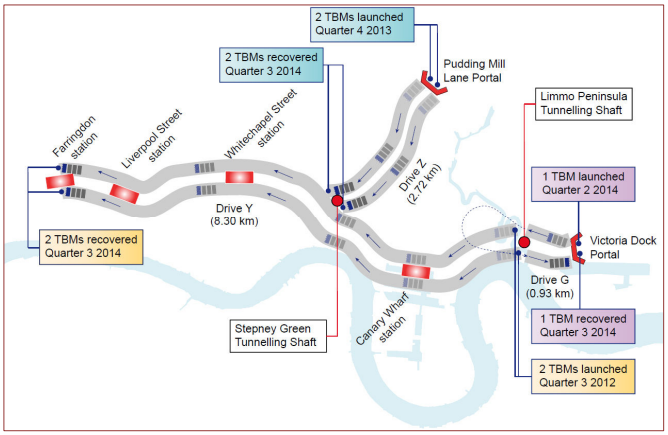
P J EDWARDS & CO (UK) LTD

PJE

CASE STUDY

CROSSRAIL C305 - EASTERN RUNNING TUNNELS
LIMMO PENINSULAR SHAFTS, LONDON - CRANE GANTRY PILING

The Llamada P-150tt Rig used for the Project



Crossrail Map showing the Eastern Tunnel Drives

Crossrail is a major new cross-London rail link project that has been developed to serve London and the southeast of England. Crossrail will support and maintain the status of London as a leading City by providing a world class transport system. The project includes the construction of a twin-bore tunnel on a west-east alignment under central London and the upgrading of existing National Rail lines to the east and west of central London.

This piling contract was associated with the Limmo Peninsula Shafts which provide for ventilation and access and are therefore a fundamental worksite for Crossrail.

The two large shafts which have been sunk by Diaphragm Walling & Sheet Piling methods are to enable the launch of tunnel boring machines that will construct the two eastern running tunnels from the Limmo Peninsula towards Farringdon.

The 8.3 km (5.2 miles) tunnels run across the capital via Whitechapel and Liverpool Street and are the longest of the 5 Crossrail tunnel drives. Two shorter tunnels will be excavated from Limmo to the Victoria Dock portal (Drive D on map).

ULTIMATE CLIENT
Crossrail Ltd

CONSULTING ENGINEER
Intecsa Industrial

MAIN CONTRACTOR
Dragados Sisk Joint Venture

ROLE
P J Edwards UK acted as Piling Contractor

SPECIFICATION
Specification for Piling & Embedded Retaining Walls

EQUIPMENT
Llamada P-150tt Piling Rig

CONTRACT PERIOD
March 2012 to May 2012

The tunnel boring machines are to be lowered down into the Limmo shafts by high capacity cranes standing at ground level. The piled foundations are required to support these massive cranes.

Using standard continuous flight auger techniques a total of 125no 750mm diameter piles were drilled up to 30.0 metres deep.

Ground conditions consisted of Made Ground overlying Alluvium, Thames Gravel and London Clay present at a depth of 8.5 metres below ground level.

The Blackheath Beds (clays, pebbles & shells) and the Woolwich & Reading Beds (silty, sandy clays) were just present at the toes of the deepest piles.

As with many Crossrail sites archaeological investigations have been mandatory. These have been necessary to record the remains of The Thames Ironworks & Shipbuilding Company which employed thousands of people up to its closure in 1912. The company played a significant part in Britain's industrial history as it was the first shipyard in the world to produce iron ships. The HMS Warrior, the world's first all-iron warship was built by The Thames Ironworks & Shipbuilding Company has now been restored and is docked in Portsmouth.

CFA piling in very close proximity to the Diaphragm Walled Shaft

Archaeological excavations revealed the remains of The Thames Ironworks & Shipbuilding Company