# P J EDWARDS & CO (UK) LTD

PJE

## CASE STUDY

## BUILDING P1 - KINGS CROSS CENTRAL

## LONDON


King's Cross Central is one of the most significant development and regeneration opportunities in Central London.

Planning permission for the main site was granted by the London Borough of Camden in December 2006 for nearly 8 million sq ft of mixed use. The permission includes up to 25 large, new office buildings totaling some 4.9 million sq ft, 20 new streets, 10 new major public spaces, the restoration and refurbishment of 20 historic buildings and structures, and up to 2,000 homes and serviced apartments.

King's Cross Central is being developed by the King's Cross Central Limited Partnership, which brings together:

- Argent King's Cross Limited Partnership - backed by Argent Group PLC, one of the UK's best respected property development companies and Hermes Real Estate on behalf of the BT Pension Scheme. Argent is the Asset Manager for King's Cross Central.
- London & Continental Railways Limited - delivered the award winning High Speed 1 railway, including the rebirth of St Pancras International, on time and to budget.
- DHL Supply Chain - a world-class provider of supply chain solutions.

**CLIENT**
King's Cross Central Limited Partnership

**ASSET MANAGER**
Argent Group PLC

**CONSULTING ENGINEERS**
Ramboll UK Limited

**MAIN CONTRACTOR**
Carillion Construction Ltd

**ROLE**
P J Edwards & Co (UK) Ltd acted as Piling Contractor

**SPECIFICATION**
Specification for Piling & Embedded Retaining Walls

**EQUIPMENT**
Mait 260 Piling Rig - Rotary Cased Piles
Llamada P150-tt Piling Rig - CFA Piles

**CONTRACT PERIOD**
May - June 2013

The development at King's Cross is the largest piece of central London to be developed under a single ownership in the past 150 years. As each phase is complete it will bring enormous and continued benefits to the area. Safety and cleanliness are two of the main objectives that the local residents are looking for but this development will offer a lot more. It will provide some 2,000 homes and serviced apartments, employment for thousands, schools, shops, food and drink outlets, cultural and community uses, health centres and many other facilities.

Over 40% of this development will be public realm including three new parks, five squares, twenty streets and three new bridges over the Regent's Canal. Much of the area's heritage will be maintained by refurbishing 20 historic buildings and structures, including the listed gasholder triplet.

The four major construction contractors carrying out the building works are Carillion, Kier group, BAM Construction and BAM Nuttall. Building P1, constructed by Carillion and designed by David Morley Architects, will be home for a new two-form entry primary school, a nursery, the Frank Barnes School for Deaf Children and a community meeting facility.

The piled foundations for this structure feature 215 No Continuous Flight Auger piles and 236 No Rotary Bored and Cased piles.

The CFA piles were constructed with diameters up to 750mm and depths up to 30 metres. These piles form contiguous bored pile retaining walls associated with the basement construction and also act as bearing piles to some of the perimeter columns.


The Rotary Bored and Cased piles were constructed with diameters up to 1500mm and depths up to 55 metres and act as bearing piles to internal columns. These piles have low cut off levels and a rotary bored and cased solution allowed them to be concreted up to these lower levels.

Ground conditions consisted of Made Ground over London Clay over the Lower Mottled Clays and Thanet Sand of the Lambeth Group. At a depth of 55 metres, the deepest 1500mm diameter rotary bored and cased pile extended below the London Clay formation and penetrated the Lambeth Group.

A Bentonite support system was set up on site to cope with the unstable nature of this founding stratum near the toe of the pile which was ultimately concreted by the tremmie technique of upward displacement. A full length reinforcing cage was inserted into this pile to carry the sonic logging tubes associated with the successful integrity testing of the pile.

The pile was drilled in close proximity to a 3 metre exclusion zone associated with underground Network Rail tunnels running alongside the site.

The design of the piles was the responsibility of ourselves and was verified by the satisfactory static load testing of three of the piles up to 5,000 kN.