P J EDWARDS & CO (UK) LTD

PJE

CASE STUDY

BOGNOR REGIS NORTHERN RELIEF ROAD
PHASE 2 - WEST SUSSEX

In 2006, Barratt Homes secured outline planning consent from the Secretary of State for the construction of approximately 700 new dwellings on a site at Felpham, Bognor. Barratt Homes then prepared a reserved matter planning application for the scheme, which included the construction of the new Bognor Regis North Relief Road.

Phase 2 of the relief road runs from the A29 roundabout in the west to the A259 roundabout in the east crossing the Lidsey Rife Flood Plain and the Barnham to Bognor Regis railway.

The new highway rises at each end on earth fill embankments to cross the flood plain on an approx. 485m long RC viaduct comprising 16no equal deck spans supported by intermediate RC piers and RC end abutments with associated wing walls. Due to the extent of soft soils beneath the site the intermediate piers and end abutments required piled foundations.

The geology at the site comprised Brickearth overlying Upper Chalk. However, within the central section alluvial clay and river deposits were present overlying the Upper Chalk.

The Brickearth consisted of medium strength, locally low strength, brown silty sandy clay with occasional flint cobbles.

CLIENT
Barratt Homes

CONSULTING ENGINEERS
Atkins

MAIN CONTRACTOR
Hochtief (UK) Construction

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

SPECIFICATION
Specification for Highway Works

EQUIPMENT
Llamada P150-TT Piling Rig

CONTRACT PERIOD
April - July 2014

CONTRACT VALUE
£650k

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The alluvial clay comprised soft to very soft dark grey, slightly sandy, clay.
The River Terrace deposits consisted of medium dense slightly silty gravel of fine to coarse sub-angular flints and chalk fragments.
The Upper Chalk exhibited a weathered zone at the top overlying structureless chalk, beneath which weak medium density structured chalk occurred.

Our chosen method of piling was to employ a Continuous Flight Auger rig to drill and concrete the 900mm diameter piles to the required depths of up to 25.750m below ground level. This was then followed by the insertion of a 2.8 tonne reinforcing cage. These were prefabricated and delivered to site in lengths of up to 21.75m.

Furthermore the piles had to be drilled to very exacting tolerances since the connection to the column above did not involve a pilecap. The intermediate piers were each provided with a row of 5no piles whilst the end abutments were provided with 11no piles each.

Our confidence in installing such CFA piles through a substantial thickness of very soft alluvium, without permanent casing, and plunging the long reinforcement cages to accurate levels allowed us to offer a cost effective solution that beat off other bids based on conventional rotary bored and cased piles.

The suitability of the system was proven with the installation of 2no preliminary trial piles which were load tested to 8,375kN each. Over 100no 900mm diameter piles were then installed successfully on programme.

The main precast beams for the biggest viaduct to be built in West Sussex were delivered on 33 metre long vehicles with special police escorts.