PILING ON THE "QT" AT HOSPITAL SITE

Restricted Access? No Problem

PROJECT

Restricted site access, coupled with respect for patients in a Welsh hospital, dictated the use of easily manoeuvrable and extra quiet plant on a precast foundations site.

The site, at Llanarth near Abergavenny, appeared at first to be an unusual place for engineers from Roger Bullivant Limited (RBL) to be operating one of the company's "Quiet" Hammer piling rigs. The rigs are usually utilised when installing foundations in busy city centre locations or environmentally sensitive sites, where restrictions on levels of noise and vibration are often crucial issues. But the site at Llanarth was a special case for another reason.

RBL installed precast concrete piles and ground beams for two new wards at the Llanarth Court Hospital mental health rehabilitation and assessment centre. But the ward foundations were delivered into the ground less than 50m from existing hospital facilities. Working as quietly as possible for the sake of patients was a priority.

The remotely controlled 3004 Q rig has a 3T hammer fitted with a special shroud designed to suppress noise, along with the associated perception of vibration.

Keeping site noise levels to a minimum wasn't the only challenge for RBL. Gaining access to the construction site involved passing through a Grade II listed, narrow stone gateway (pictured below)

which is the only way into the hospital estate. The pointed Gothic arch stands 3.5m high and 3m wide, which precluded the use of large plant and therefore restricted the number of contractors able to work on site. RBL's "Quiet" Hammer rig, with its mast laid flat, passed through the narrow opening onto site, with centimetres to spare.

REQUIREMENT

The restricted access contributed to the main contractor's view that in situ piling was not the best foundation method for the new wards. Piled foundations were also necessary as the buildings were to be constructed on ground liable to flood and consisting of silts and very sandy clays overlying gravels and dense cobbles. The restricted access also meant bringing in lorry loads of concrete and reinforcement steel was not really feasible and a tight completion also worked in favour of the precast option. RBL had just three weeks to complete the work.

SOLUTION

A total of 323 precast concrete piles were installed for the two blocks, at a rate of around 45 a day. RBL also installed 31 steel piles for a perimeter security fence.

Precast concrete piles are driven until a 'set' number of blows from the Q-Hammer, for a given penetration, is reached. This, combined with variable ground conditions, led to piles achieving depths of between 11m and 17m.

Piles are driven in 4m long sections joined together as the pile descends using a 'Collet' mechanism which locks a reinforcing bar protruding from the top of one section into the socket of the next. Once driven to the desired set, piles are cropped to level and capped.

Pre-cast pile caps and ground beams were also used to speed up construction. Some 680m of ground beams were installed in a 24 hour period.

ON SITE FACTS

MAIN CONTRACTOR	:	Kier Western
FOUNDATION ENGINEER:		Roger Bullivant Limited
PILE NO.	:	323 pre-cast / 31 steel
FOUNDATION BEAM	:	780 linear metres

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