

Piling Equipment Specialists

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ABI Equipment Ltd were contracted to hire an HPZ635-700 Hydropress attachment to Dawson-WAM for the installation of steel sheet piles at their North Acton project in late 2018. This was to complement the suite of Dawson-WAM's own ABI equipment in use on the site, making for a smooth and efficient execution of the installation works.

Urban regeneration in North Acton, North London has created a boom in numbers of people living and working in the area. Whilst great news for the local economy it has highlighted certain unsatisfactory amenities - no focal point for the area, and poor, unsafe pedestrian access to the Underground station. To address these issues Ealing Borough Council is implementing an improvement scheme, beginning with the conversion of a former petrol station site to a landscaped, communal open space with wide, well-lit walkways down to the station.

Site contractors Dawson-WAM carried out works to shore and reinforce the ground around the site periphery using one of their powerful ABI TM22 Mobilrams and several different ABI front-end piling attachments.

Given the site's proximity to existing buildings - business, residential and hotel accommodation – as well as the busy Central Line railway, it was imperative to use installation methods that would have minimal environmental impact. The site itself is made ground overlaying stiff to very stiff London clay at a depth of just 1-2 metres below ground level.

Station Square, North Acton

Our client: Dawson-WAM

Equipment used:

ABI Mobilram TM22

ABI VDW 10050 Double Auger Drive

ABI MRZV 30VV Vibro

ABI HydroPress HPZ635-700



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The ground was initially pre-augered using an ABI VDW double auger drive system. This 'cased CFA' system uses a conventional string of continuous flight augers rotating inside a counter-rotating outer casing that has been fitted with a tungsten carbide tipped 'cutting shoe'. With twice the cutting power making it to the cutting face the VDW-system drills very productively and with a high degree of accuracy, both in terms of positional accuracy and verticality. During the drilling process the counter rotating casing acts as a full length guide for the auger string inside and this means that the pre-augered hole can be formed precisely where the driven steel pile is to be installed during the second stage of the piling process.

Once the pre-augering was completed along the pile line the VDW-system was then exchanged for a powerful ABI MRZV30VV variable static moment, variable frequency vibrator. Dawson-WAM were then able to pitch and drive a continuous wall of high modulus H-section HZ-680LT piles, up to 14m long. Given the sensitive nature of the site location Dawson-WAM decided to also combine the use of the 30VV high frequency vibrator with low pressure water jetting of the HZ piles in order to minimise the potential for disturbance to nearby residents. Along with the initial pre-augering work this proved to be a great combination and ensured that all piles were installed to full depth in the challenging London clay throughout the drive.



This exchange process taking only a matter of minutes with ABI's unique D6-Rapid Docking System being an integral part of the TM22 design. With the vibrator installed Dawson-WAM were then able to pitch and drive a continuous wall of high modulus H-section HZ-680LT piles, up to 14m long. Given the sensitive nature of the site location Dawson-WAM decided to also combine the use of the 30VV high frequency vibrator with low pressure water jetting of the HZ piles in order to minimise the potential for disturbance to nearby residents. Along with the initial pre-augering work this proved to be a great combination and ensured that all piles were installed to full depth in the challenging London clay throughout the drive.

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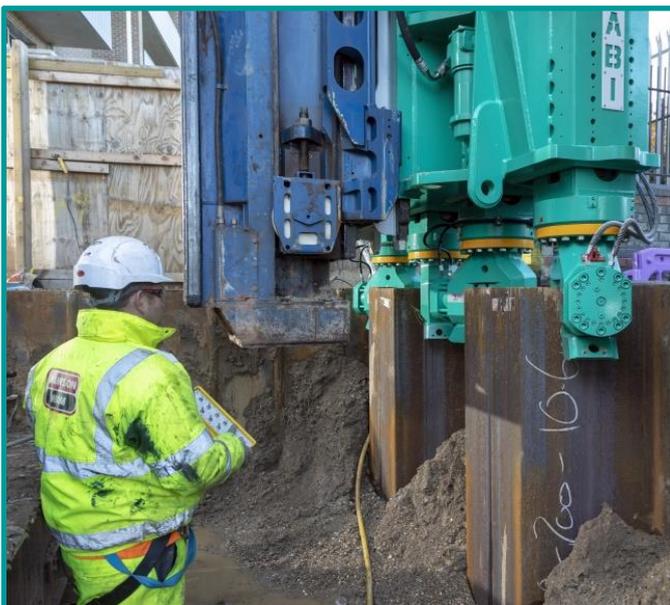
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At each end of the high modulus wall Dawson-WAM were also contracted to install continuous walls of 8-10m long AZ36-700 steel sheet piles. Here they decided to again pre-auger with the VDW-system, and then to use our ABI HPZ-Hydropress system for a low noise, vibration-free piling process.

The Hydropress is a four cylinder hydraulically powered pile pressing system which initially utilises the combined reaction mass of the piles and the rig to press one pile into the ground over a 600mm stroke. Once one pile has been installed by 600mm the process is repeated for each of the other three piles until all four piles have been installed by a common 600mm increment. At this point the head assembly retracts and the four cylinders repeat the 600mm installation process over and over again until the piles have been installed to full depth.

Using this system generates only low noise levels (the noise of the engine running in the piling rig) and no ground vibration so is an ideal solution for sheet pile installation in cohesive soils in urban environments.



The combination of specialised equipment and adaptability of the TM22 rig made it possible to overcome some challenging site conditions, whilst minimising the disruption to the local community.

The local council was also keen to ensure the whole project should have minimal environmental impact, not just from the potential noise and vibration associated with normal steel pile installation but also to minimise air pollution.

Dawson-WAM were also able to place a very large tick in that box through the use of their ABI TM22 Mobilram. Equipped with a 470kW truly compliant EU Stage IV diesel engine and ABI's unique Efficiency Drive systems (ED) Dawson-WAM were able to undertake the works with the most powerful, most fuel efficient and least polluting telescopic leader rig on the market.

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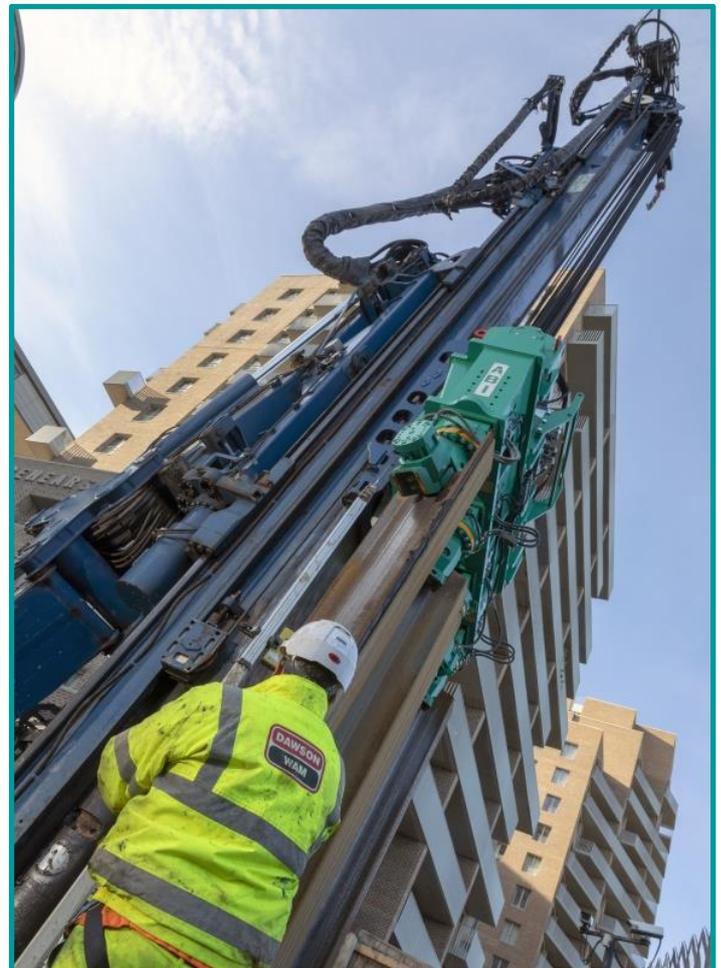
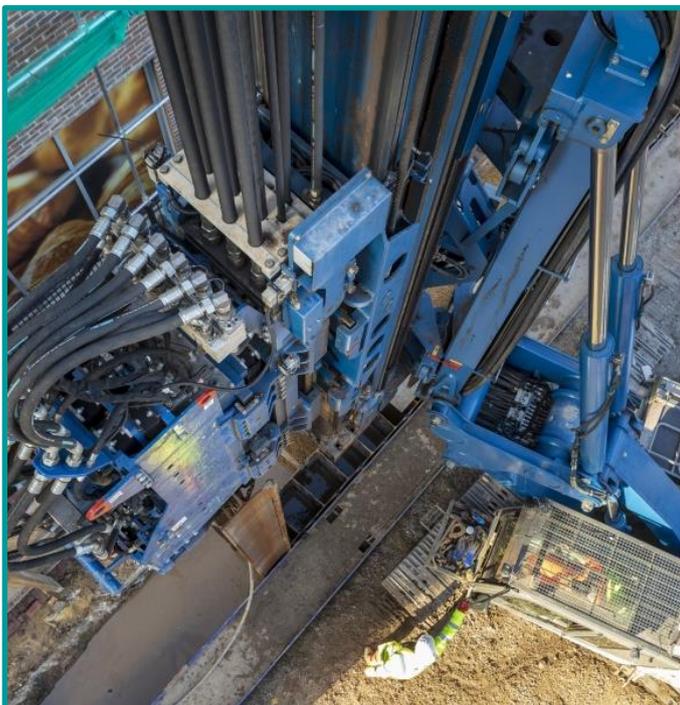
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As an example, if compared to its nearest competitor, this TM22 set-up produces 48% less diesel particulate matter and over 90% less NOx. Not only that, but the ED systems ensure fuel savings in excess of 40%. All this being achieved whilst delivering the optimum power to each piling process at all times and reducing machine noise and internal machine wear.

That has to be good news for everyone on our planet - not just the residents of North Acton!

London Underground officials kept a watching brief over the project, while constant monitoring of movement levels ensured they kept within tolerance. As a result, there were no complaints made about noise or vibration during the whole works.



Simon Wilson, Site Agent for Dawson WAM says:

“As proponents of the ABI range we knew that the combination of these pieces of equipment would prove highly successful, and we are more than satisfied that all our requirements were met in terms of power, efficiency, ease of use and environmental factors.”

Technical specifications and methodology documents for all the equipment used can be found on our website at: www.abi-eqp.com