



BASEMENT CONSTRUCTION

Specialist Civil Engineering and Piling Contractors



WHO WE ARE...

DAWSON-WAM are specialist civil engineering and piling contractors with operations in the UK and Ireland.

The company undertakes large scale civil engineering and piling projects for public authorities, contractors and developers.

The company was founded in 1971 and has based its business around a collaborative approach to provide our clients with innovative cost effective solutions to today's construction challenges.



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DAWSON WAM BASEMENT CONSTRUCTION

DAWSON-WAM offer a complete Design and Construct service in Basement Construction throughout the UK and Ireland.

We specialise in and can offer close proximity piling to within 100mm of existing facades/walls/boundaries which allow the Client and their Structural Engineer to maximise the basement footprint/space. Early Specialist Contractor involvement can prove beneficial to the overall project.

We can provide embedded piled basement walls which can be secant, contiguous or sheet piles as well as foundation piles / crane base piles for the structure itself. We can provide low headroom / mini piling from Specialist Subcontractors, managed by us, within our overall offer/package.

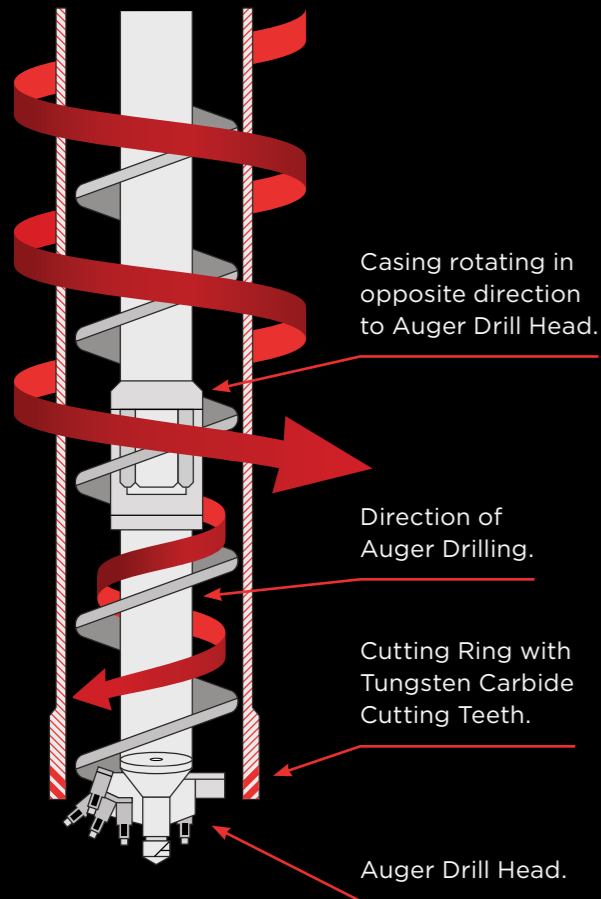
We can provide ancillary activities such as capping beam construction, propping and excavation works.

Projects described in this booklet include new hotels, hotel extensions, private developments, university campus basements and more.



CASED CFA

Our piling rigs utilise a double auger drive to install our Cased CFA piles. This differs significantly from the conventional Continuous Flight Auger (CFA) piling techniques by using an external casing which acts alongside the auger string. The casing is rotated anticlockwise at speeds of up to 66rpm. Conversely the auger is rotated clockwise at a similar rate.



Benefits of the double auger drive and external casing to the project over conventional CFA;

- More accurate installation (tolerances up to 1:150 vertical alignment).
- Less susceptible to moving offline due to obstructions.
- Greatly reduced sensitivity to necking and 'flighting'.
- Increased speed of installation.
- Drilling through differing ground conditions is made easier as the auger can be retracted within the casing or alternatively can lead the casing.
- Large savings in concrete and spoil quantities as the casing prevents drawing in of extra material from outside the pile diameter (flighting).

This Cased CFA system has been used by **DAWSON-WAM** for the past 14 years to install reinforced concrete piles successfully throughout the UK and Ireland. Our rigs can install piles up to 900mm dia and to depths up to 23m.



CASING AND AUGER ADAPTABILITY TO GROUND CONDITIONS

The picture to the left shows the cutting teeth on the auger and the cutting ring which is welded to the casing.

In hard grounds the auger can be made to protrude below the casing to enable the piling rig to cut through the ground quicker. Conversely the auger can be withdrawn inside the casing for softer grounds.

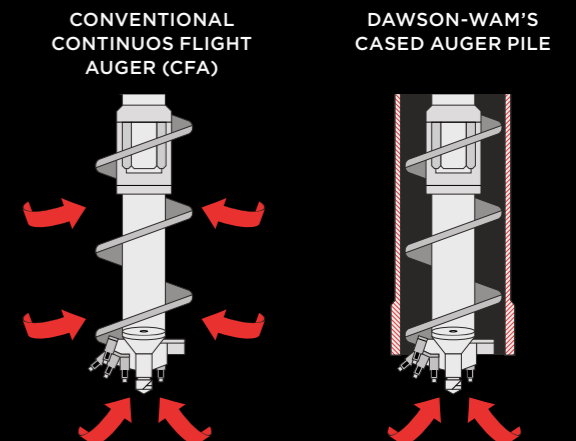
A well-known problem with CFA piling, sometimes called 'flighting,' can occur when the upper strata is relatively loose or soft compared with the underlying founding strata.

In these conditions the rate of advance of the auger is slowed by the stiffer ground and the auger, which acts as a vertical conveyor, tends to draw soil from the sides of the bore. This phenomenon can cause voids or settlement in the surrounding soils and a result may cause damage to adjacent structures, whether above or below ground.

DAWSON-WAM's Cased CFA system allows for a casing to protect the sides of the bore from the auger negating any potential for 'flighting'.

This allows DAWSON-WAM's Cased CFA rigs to pile within extremely close to existing structures and their foundations with much greater protection afforded than conventional CFA systems.

The photograph to the left shows close proximity piling to an occupied building in London's Theatre District.



VERTICAL TOLERANCES

DAWSON-WAM's Cased CFA system allows for vertical tolerance of up to 1:150 compared to the Conventional CFA systems which provide a tolerance of 1:75. This is because the rigid outer casing keeps the bore straight and true and is much less susceptible to deviating offline due to obstructions.

The photo to the left shows DAWSON-WAM's Cased CFA piled wall in a 12m deep excavation in London. At 12m deep if this were to be constructed with a standard system each pile could be over 150mm out of position in any direction but with the Cased CFA system its less than 50mm.

TYPICAL GUIDE BEAM CONSTRUCTION

A trench is excavated and polystyrene formers are set to the precise line of the piled wall. Reinforcement and concrete is then placed either side of the polystyrene to form the guide beam. Using the Cased CFA System the piles can be finished at the top of the guide beam allowing the guide beam to be used as a soffit for a capping beam and there is no need to break down piles.



HARD/HARD SECANT WALLS

The Cased CFA System allows secant walls to be constructed as Hard/Hard as opposed to Hard/Firm or Hard/Soft offered by the other systems. The Hard/Firm or Soft wall requires every other pile to be formed using a 'soft' concrete which generally achieves 15N/mm² strength at 28 days as it is easier to core through to form the wall. The Hard/Hard wall allows all piles to be constructed using structural strength concrete as the casing allows the rig to core through the harder concrete allowing each pile to be reinforced.

CLOSE PROXIMITY PILING

DAWSON-WAM's Cased CFA system allows piling to be completed within 100mm of existing structures. The geometry of DAWSON-WAM's Cased CFA system means that piles can be installed extremely close to existing structures. The motors and gearbox that turn the auger and casing are set so that no part of the system encroaches beyond the cased auger.



PILING IN ROCK

DAWSON-WAM's Cased CFA System allows greater capability and efficiency when drilling into rock.



ENNISKILLEN LIMESTONE



SCOTTISH BASALT



MAN MADE OBSTRUCTIONS

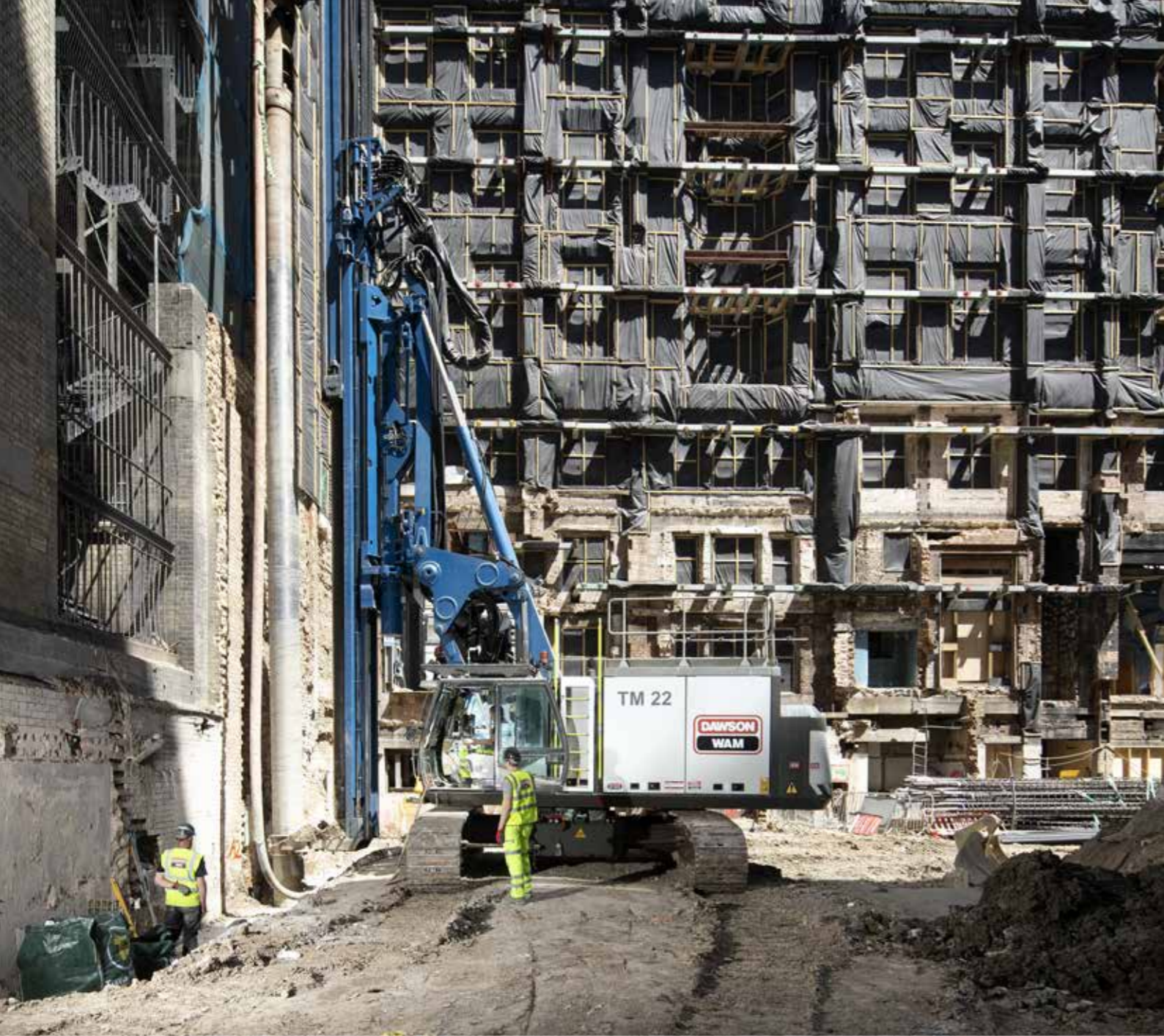


PARK STREET, CAMBRIDGE

3 storey secant basement constructed in the heart of the city centre for a new aparthotel and basement carpark.

Over 220lm of 750mm diameter secant piles were installed to allow a 12m excavation. Works included removal of existing piles and required 27 party wall agreements.





1-4 MARBLE ARCH

A close proximity secant pile wall and buttress piles were installed to deepen an existing basement whilst retaining a listed façade. All works were completed through a 3.5m wide by 4m tall opening in the façade.





BEAUMONT HOTEL, LONDON W1

New Hotel Construction in the heart of Mayfair, between Oxford Street and Grosvenor Square. 630mm dia. secant basement in close proximity to neighbouring structures and installed through existing brick foundations



CONNAUGHT HOTEL WEST WING EXTENSION, MAYFAIR, LONDON W1

City centre basement design and construction to three levels. Works included hard to hard secant piled retaining wall installation to enable 12m deep excavation in immediate proximity to existing hotel; capping beam and temporary steel propping.





**HAM YARD, HOTEL DEVELOPMENT,
LONDON W1**



New prestigious hotel basement construction in a very restricted site in London's West End. The 10m deep secant basement with two levels of innovative temporary propping was installed within 100mm of the listed Piccadilly Theatre and other residential and retail structures.



BROMLEY SOUTH CENTRAL, KENT

Major mixed use development in a busy town centre site, adjacent to live railway, residential and commercial properties. Works included formation of a 10m deep secant piled basement, foundation piles and dual level temporary propping.



THE CURTAIN HOTEL, SHOREDITCH EC2A

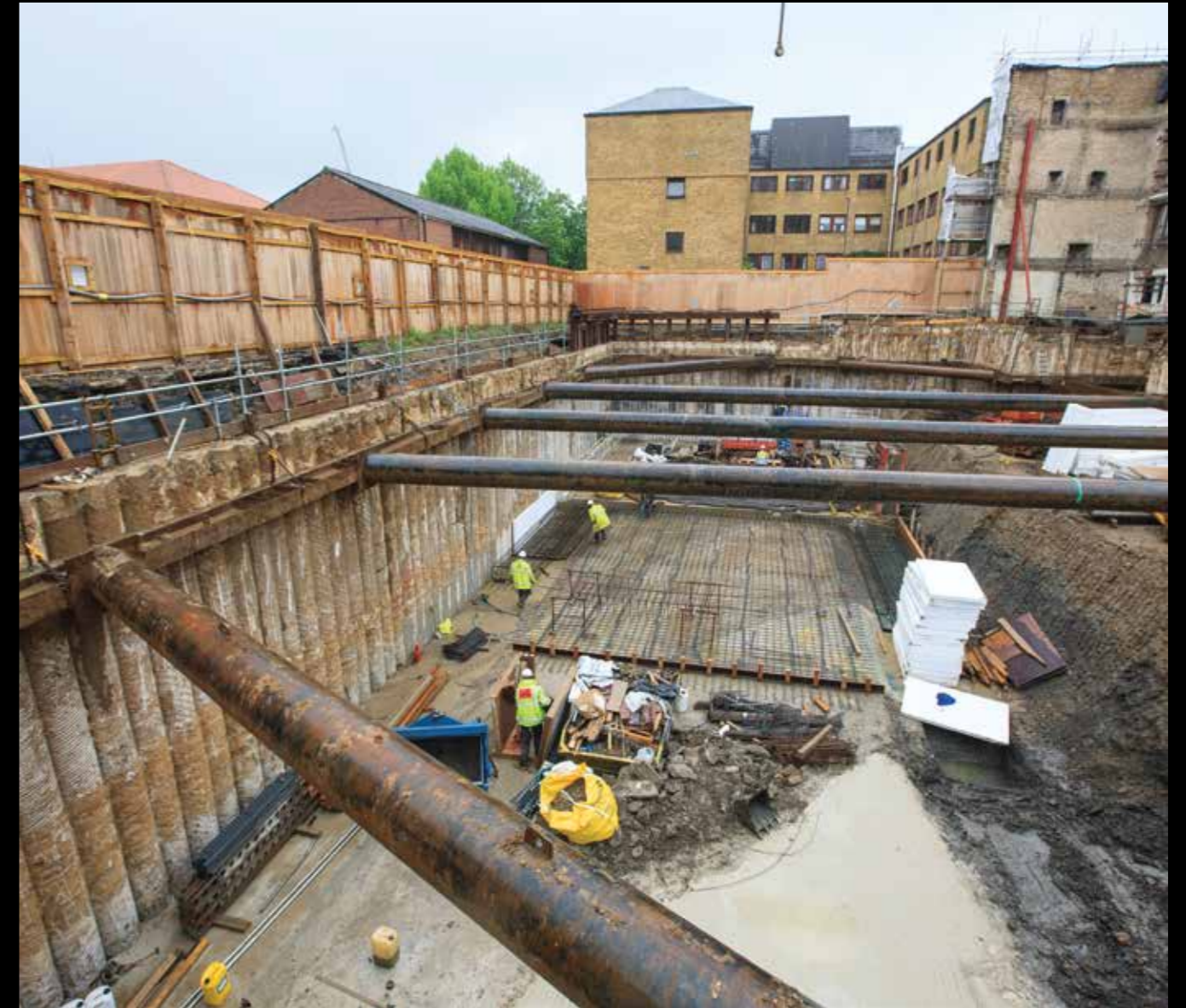
New flagship hotel by New York's Gansevoort Hotel Group sees a 19m deep 750mm secant wall retaining up to 13.5m around the perimeter of the site footprint. Load bearing piles were installed to 23m through the existing basement's reinforced concrete slabs.





NEW FETAL MEDICAL CENTRE, KINGS COLLEGE HOSPITAL, LONDON

Installation of an 8m deep secant piled basement and temporary propping, in close proximity to a retained listed facade. Works were completed within a busy hospital complex.





**TREGUNTER ROAD,
KENSINGTON, LONDON**

A 12m deep secant piled basement for a private mansion development in stylish Kensington. Piles were installed in close proximity to a neighbouring house and to the full perimeter of the site.





RESIDENTIAL BASEMENT NOTTING HILL

Secant retaining wall constructed in very small site footprint, allowing for an 8m deep excavation with two levels of temporary propping.

Extremely close proximity to adjacent occupied residential properties.





UNIVERSITY OF GREENWICH, LONDON

This basement for the new university library was constructed using 280m of contiguous piled retaining walls and over 350 load bearing piles. Works took place in close proximity to neighbouring walls and adjacent to a live Network Rail cutting.



SEYMOUR STREET

Installation of 450, 525 and 630mm diameter secant walls and load bearing piles in very restricted working conditions over multiple levels. Piles were installed in extremely close proximity to live properties to allow an 8m deep basement to be constructed in Marble Arch, London.





LINCOLN'S INN

450mm diameter secant wall and load bearing piles installed in close proximity to the Great Hall of the Honourable Society of Lincoln's Inn. The listed structures date back to 1422 and are located in the busy Chancery Lane area of London.





GOETHE INSTITUT, DUBLIN

Installation of a 450mm diameter secant wall within 100mm of an occupied 4 storey building to allow construction of a basement in Dublin's prestigious Merrion Square.





SIMPSON STREET, ANCOATS, MANCHESTER

120m of contiguous piles were installed into the stiff clays to allow the construction of a 7m deep basement for a residential complex. As part of the works the company also installed over 100 load bearing piles. A new innovative guide wall technique was used to accurately position the contiguous piles.





LANYON PLACE, BELFAST

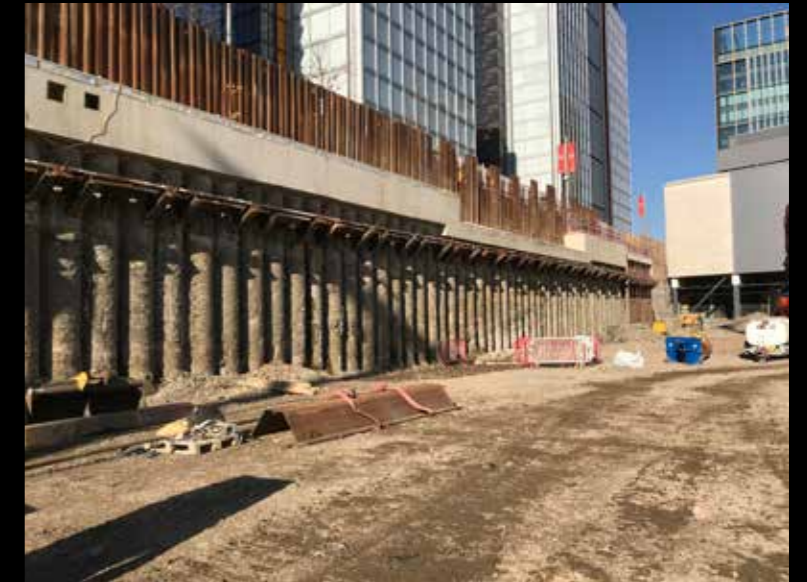
220m of 750mm diameter secant piles were installed to allow the construction of a 10m deep basement in Belfast City Centre. As part of the works the company also installed over 300 load bearing piles, temporary works sheet piling and temporary propping.

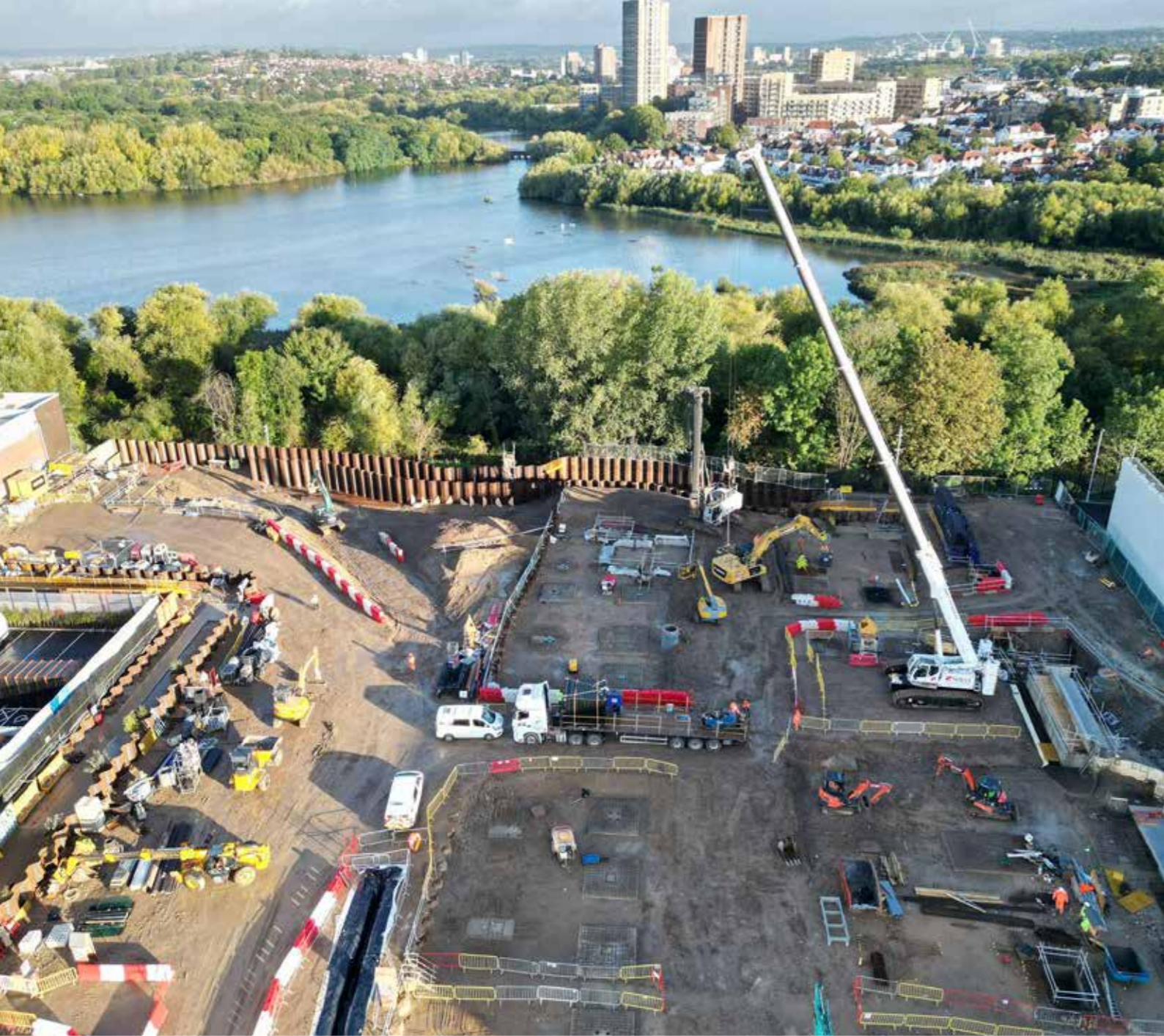




CHERRY PARK, STRATFORD

260m of sheet piled and contiguous piled retaining walls and ground anchors to facilitate the construction of a basement for 1,224 luxury private rental apartments.





LON01B2 DATA CENTRE

Over 1,000 tonnes of sheet piles installed in North London for a new data centre in a programme intensive package of works.

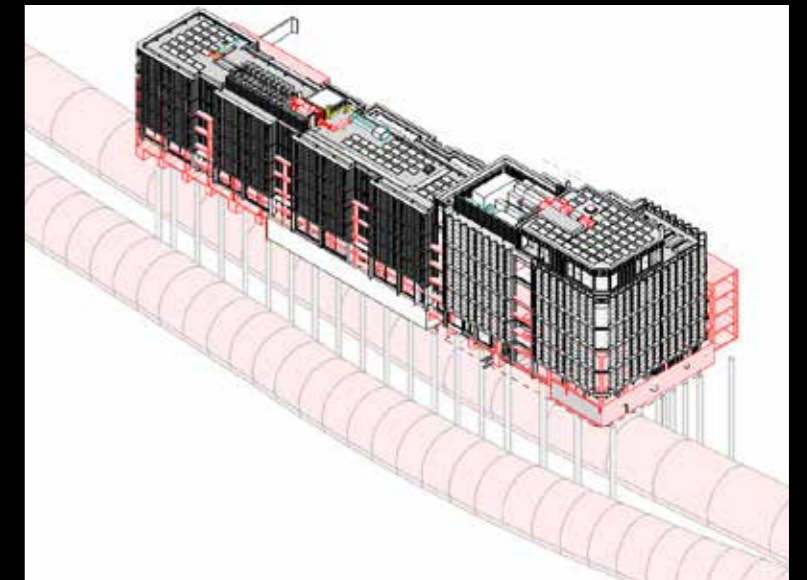
Works included installation of sheet piles using a variety of technique, including silent and vibrationless pile press.





FARRINGTON ROAD PREMIER INN

Four phased basement package for a new hotel constructed over the top of an existing Network Rail Tunnel. Testing of existing piles, new 900mm bearing piles, sheet pile retaining walls and propping were all included in the scope.



WHITE LION STREET

A close proximity secant piled basement of 155m in length was constructed in Central London.



SIR WILLIAM HENRY BRAGG BUILDING, UNIVERSITY OF LEEDS

Installation of over 270m of contiguous piled retaining wall for a new combined sciences building basement.



ST EDWARDS SCHOOL QUAD PROJECT, OXFORD

Installation of secant wall and load bearing piles for a new hall and library at a prestigious secondary school.



ETON COLLEGE, WINDSOR

Over 200m of secant walls and 150nr load bearing piles installed 32.5m into the underlying Chalk for a new Sports and Aquatics Centre.

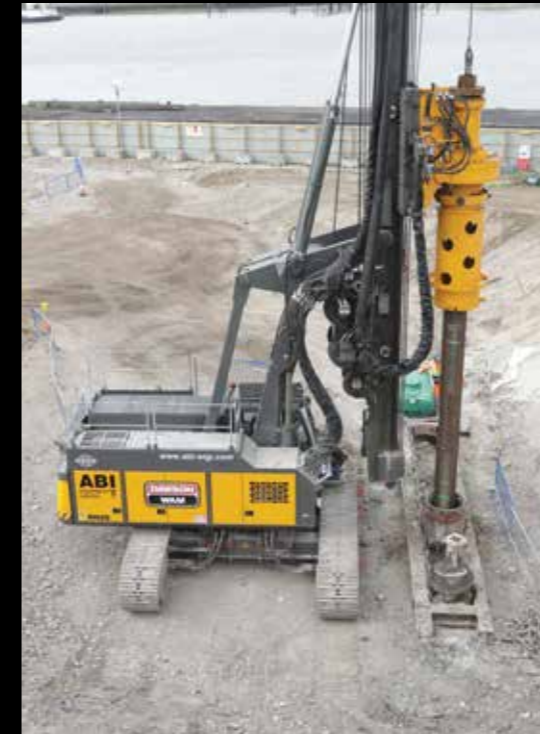


ST ANDREWS LANE, DUBLIN

A close proximity secant walled basement to transform a former theatre into an 8 storey hotel with piles installed up to 6m into very hard Dublin Limestone.

WOOLWICH ROYAL ARSENAL PHASE 9

Foundation package for a new luxury residential complex on the site of the former Woolwich Power Station. Works included rotary bored piling, large diameter CFA piling, sheet piling and vibro concrete columns.



Top And Bottom Pictures Right:

PRESTIGE HAMPSTEAD HEATH DEVELOPMENT

A 7m deep secant piled basement and pre-loaded temporary propping system.

Picture Below:

BARTS HOSPITAL, LONDON EC1

Commencing basement piling installation.



ULSTER HOSPITAL DEVELOPMENT, BELFAST

New extension to the Ulster Hospital Complex which included over 880m of new secant and contiguous piled retaining walls and over 1200 load bearing piles. All piles were installed into the strong sandstone with rock sockets up to 8m in length.





RNAS YEOVILTON

Over 200 linear metres of secant piles as well as load bearing piles were installed up to 8m into mudstone to facilitate an excavation of up to 6m deep. The works were required for a new Aircraft/Amphibious Vehicle Underwater Escape and Survival Training facility for the Royal Navy.



UNIVERSITY ARMS, CAMBRIDGE

A close proximity king post wall was installed extend the depth of an existing basement whilst retaining the existing basement wall.



MALONE ROAD DEVELOPMENT, BELFAST

Residential basement formed by installation of 630mm dia. secant piled wall and temporary propping.



YOUNG STREET, KENSINGTON

A close proximity 450mm diameter secant wall of over 140m was installed to allow a new basement for a new mixed use development.



ST PETER PORT, GUERNSEY

Extremely close proximity secant and sheet piled wall installed into rock with rock anchor support.



CURZON BASEMENT BELFAST

450mm diameter secant piled wall, installed in close proximity to neighbouring commercial properties to form a 4m deep car park basement. Secant piles were left exposed as a basement feature.



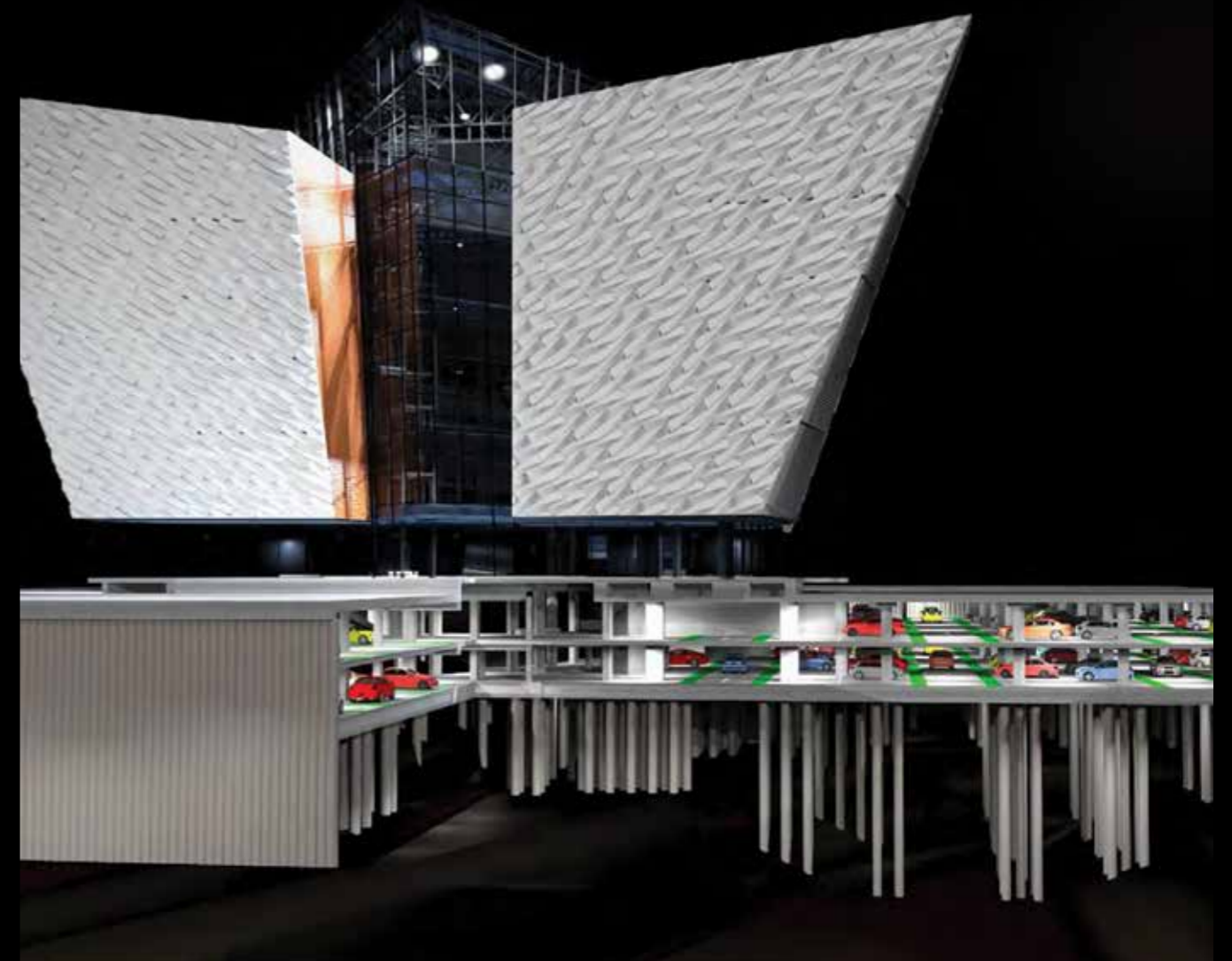
VICTORIA STATION UPGRADE

A 750mm diameter secant wall was used to form a new entrance to the busy Victoria Station in London. Piles were installed using our Cased CFA system and reinforcement was pushed 4m below commencement level to exact levels and orientation by a secondary rig.



TITANIC QUARTER, BELFAST

Over 400m of secant wall and 1000 load bearing piles were installed to for a 8m basement for the signature Titanic Visitor Centre in Belfast. Piles were installed through soft clays and timber obstructions and the secant wall was retained using 160 ground anchors.



Model of completed Titanic Belfast building showing basement construction and foundation piling.

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