



## CASE STUDY

## Bearing Pile and Retaining Wall Design

### Twickenham Station Bearing Piles and Retaining Wall

#### THE PROJECT

A design for bearing piles and a contiguous pile retaining wall as part of station redevelopment.

#### THE PROBLEM

Changes to the contractor's wishes, as well as the need for piles designed for high accidental train impact loads, made this a challenging and dynamic project.

#### REMEDY'S SOLUTION

Design of 147no. 660/600mm diameter restricted access case and auger bored piles; 156no. 600mm diameter CFA piles; 23no. crane base piles for three tower cranes; 72no. 600mm diameter contiguous retaining wall piles. The design was carried out in accordance with BS EN 1997-1 and BS EN 1992-1-1.

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Remedy Geotechnics carried out a complex and demanding pile design for 326no. bearing piles and 72no. contiguous wall piles at Twickenham Station for specialist geotechnical contractor Keller. The client for the project was Solum - a partnership between Network Rail and Kier Property. The development comprises a new station with modern facilities and also incorporates retail units and 115 apartments around a new station plaza. The new station is situated on a podium over the main rail lines with a new public plaza at the entrance of the ticket office, which gives direct access to the platforms via steps and lifts. Station parking and taxi pick up are also incorporated.

Remedy Geotechnics worked closely with Keller (geotechnical contractor), Waterman Structures (Principal Designer) and Osborne (Principal Contractor) to design the complex foundation scheme. Columns adjacent to the track, which support the podium deck, were designed to withstand an accidental train impact load of up to 4,000kN, resulting in accidental horizontal

loads of up to 245kN being transferred to the piles. The contiguous piled wall was originally designed based on a bottom up construction sequence, with temporary propping. However, Osborne identified that programme savings could be made if a top down sequence was adopted, eliminating the requirement for temporary propping. Remedy therefore redesigned the contiguous wall to incorporate a top down sequence, utilizing a temporary berm in front of the wall until the ground floor slab was installed.

The design was carried out efficiently and Keller finished the piling works ahead of programme. Remedy Geotechnics offer a full bearing pile and retaining wall design service, so you can leave the ground to us!

**Contact Remedy Geotechnics - we'll give you an answer every time.**

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