



## CASE STUDY

## Steel Bearing Pile and Retaining Wall Design

### Bath Quays Anchored River Wall Design

#### THE PROJECT

Design of tied sheet piled river walls and bridge abutment adjacent to the River Avon in Bath.

#### THE PROBLEM

Complex design, tight site constraints, and poor ground conditions.

#### REMEDY'S SOLUTION

Integration of numerical design methods to validate the design of the retaining wall, anchor pile and bridge abutment.

The design was carried out in accordance with BS EN 1997-1 and BS EN 1992-1-1.

Ivor King Piling approached Remedy Geotechnics with a complex design problem for a combined tied sheet piled river training wall and bridge abutment.

The new river wall and bridge were part of a wider scheme that comprised new residential buildings, office blocks and public space on both sides of the River Avon in Bath.

A preliminary river wall design anticipated pile deflections that were too high (because of very weak ground) and unacceptable for the stringent movement limitations required for the bridge support. Remedy developed the design for the tied back wall utilizing two groups of 900mm diameter bored piles as anchorage, offset from the river wall. This limited deflections to acceptable magnitude. Supplementary bored piles were also incorporated under the bridge

abutment to take the high vertical loads.

The design was completed using specialised retaining wall software and pile group analysis to ensure displacement of the systems were compatible for normal, river scour and flood situations expected for the 120 year design life. An accidental load case allowing for a possible future tie failure was also incorporated to ensure resilience in the design.

Remedy worked closely with Ivor King (Piling Contractor), Webb Yates (Civil and Structural Designer) and BAM (Principle Contractor) to achieve a joined-up design solution for this complex problem.

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

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