Suttle Projects Suttle Piling

Project Profile No: 25/13

Tel: 01202 674194
Email: info@suttleprojects.co.uk

Ramsden Park Road

Client: AMCO on behalf of Network Rail (Eastern)

Value: Circa £365,000

Duration: **12 weeks**

Project Detail

Suttle Projects was appointed to deliver rail bridge remedial works at Ramsden Park Road, Billericay, to stabilise and strengthen distressed masonry wingwalls within a live railway environment. The bridge carries an operational railway over a private road, with the works taking place beneath and adjacent to railway infrastructure.

The principal works focused on the south-west and north-west wingwalls, which had suffered significant cracking, displacement and progressive movement over time.

The works comprised the installation of AS50 Vulcan Earth Anchors and steel waler beams to temporarily stabilise the existing masonry wingwalls, followed by construction of new reinforced concrete wingwalls founded on 600mm diameter SFA bored reinforced concrete piles. Mass concrete infill was then placed between the new and existing wingwalls to form the permanent support arrangement.

Issue:

The existing masonry wingwalls had developed substantial cracking and movement, creating a risk of continued deterioration and requiring intervention to stabilise the structure and provide a durable long-term strengthening solution.

The project was complicated by several key constraints:

- Working immediately adjacent to a live operational railway.
- ALO and overhead line equipment constraints, requiring strict control of plant movements, lifting operations and working methods.
- Restricted working areas around the bridge and within the rail environment.
- A private road passing beneath the bridge, requiring partial closure and controlled access arrangements during the works.
- Complex geometry of the new reinforced concrete wingwalls, including difficult tie-ins with the existing masonry, abutments and mass concrete infill between the new and existing wingwalls.
- Limited working space for anchor installation, piling, shuttering, reinforcement fixing and concrete placement.

- The need to carefully sequence temporary stabilisation, piling, reinforced concrete works, mass concrete infill and masonry repairs.
- Programme constraints associated with design coordination, temporary works, material procurement, Work Package Plans, task briefings, inspections and hold points.

These constraints required careful planning, robust temporary works design and close coordination between the client, designers, site team, specialist subcontractors and railway stakeholders.

Solution:

Suttle Projects developed and coordinated a tailored construction methodology to stabilise the existing wingwalls and construct the permanent strengthening works safely within the constrained rail environment.

Temporary stabilisation was achieved through the installation of AS50 Vulcan Earth Anchors through the existing masonry wingwalls. The masonry was cored at the required angle to suit the anchor alignment, before the anchors were driven to the required depth. The anchors were then tensioned, proof-tested and locked off in accordance with the design requirements. Steel waler beams were installed across the face of the existing masonry to distribute the stabilising forces and provide restraint to the distressed south-west and north-west wingwalls prior to construction of the permanent works.

The permanent works comprised new reinforced concrete wingwalls founded on 600mm diameter SFA bored reinforced concrete piles. A temporary piling platform was formed to provide a stable working area for the piling rig, enabling the piles to be installed safely within the constrained rail-side environment. The piling works were carefully planned around plant movements, access constraints, ALO controls and the need to maintain safe operations throughout.

A key challenge was the complex geometry of the new reinforced concrete wingwalls. The new walls had to be formed around the existing masonry and abutment arrangement, with mass concrete infill placed between the new and existing wingwalls to create the permanent support arrangement. This required a bespoke temporary works and shuttering solution, particularly due to the wall height, irregular geometry, limited working space and the need to maintain safe working methods adjacent to the railway.

The works were controlled through Work Package Plans, task briefings, temporary works procedures, inspection and test plans, permits, hold points and regular coordination with the client and specialist subcontractors. Particular attention was given to ALO controls, lifting and plant movements, exclusion zones, access management, concrete quality, reinforcement checks, anchor installation, anchor testing and pile installation records.

By strengthening and retaining the existing bridge structure rather than pursuing wholesale replacement, the scheme supported a more sustainable approach to asset management. The solution extended the service life of the existing rail asset while avoiding the greater disruption, carbon impact and cost associated with full replacement.

Outcome:

Suttle Projects successfully delivered the remedial works within a constrained live railway environment, providing a safe, durable and long-term strengthening solution to the distressed wingwalls.

The completed works:

- Stabilised the south-west and north-west masonry wingwalls.
- Restored the structural integrity of the bridge wingwall arrangement.
- Installed AS50 Vulcan Earth Anchors and steel waler beams to provide temporary restraint to the existing masonry.
- Delivered new reinforced concrete wingwalls supported on 600mm diameter SFA bored reinforced concrete piles.
- Incorporated mass concrete infill between the new and existing wingwalls to provide the permanent support arrangement.
- Maintained safe railway operations throughout the works.
- Managed the private road beneath the bridge through controlled access and partial closure arrangements.
- Overcame complex reinforced concrete geometry, restricted working areas, height limitations and railway-interface constraints through bespoke temporary works and careful sequencing.
- Delivered a compliant, high-quality solution in line with Network Rail requirements and the approved design.

Photographs: