Case

STUDY

TENAX HM HS2 Old Oak Common Working Platform



The BACKGROUND

Standing on the site of the Great Western Railway stabling sheds and maintenance facility near Willesden London, HS2 Old Oak Common station is set to be London's rail super hub with 14 new platforms, 6 serving HS2, 4 serving Crossrail's new Elizabeth line and 4 serving conventional rail services for London and the West.

On completion the station will be the largest in the UK with a box structure 850m long, 70m wide and 20m deep. A subsurface structure of this kind requires extensive ground engineering works.

Our Client's REQUIREMENTS

A sustainable solution for a reinforced working platform using geogrids.

Contractor Balfour Beatty VINCI Systra JV appointed the Bachy Soletanche Balfour Beatty Ground Engineering JV as a subcontractor to carry out piling and diaphragm wall construction and associated works.

The geotechnical joint venture approached Geosynthetics to provide a technical and sustainable solution for a reinforced working platform using geogrids.

THE NUMBER OF LORRIES SAVED FROM GOING TO SITE.



TONNES OF AGGREGATES SAVED.



REDUCTION OF GRANULAR MATERIAL

Our Value Engineered SOLUTION

The introduction of Tenax high modulus geogrid helped increase the angle of load distribution and serve to minimise the thickness of granular material by more effectively spreading the loads imparted from the piling and diaphragm wall rigs.

Working alongside Bachy Soletanche Balfour Beatty Ground Engineering JV the soil information and rig details were provided and calculations were undertaken for 6 rig types, with pressures between 200kPa and 420kPa.

The total area of platform required was 47,170m2 approx, divided into the west box, east box and central box areas, with levels varying from 25.100m AOD to 22.200m AOD from west to east.

The soil profile consisted of made ground overlying London clay overlying lambeth group over thanet sand over chalk. The base level of the working platform was mainly on the interface between the made ground and the weathered London clay, with a characteristic undrained shear strength of 35 kPa and a unit weight of 20 kN/m3.

After various scenarios analysed by our engineering department following the requirements from the project team, the final solution consisted typically of a 720mm working platform with recycled granular material Class 6F2 and 3 layers of Tenax HM Geogrids for reinforcement spaced 240mm between each layer.

Geosynthetics was succesfully able to provide a reinforced solution which minimised the amount of aggregate which had a positive effect on reducing the carbon footprint, construction time, vehicle movements and costs.

We worked very closely with the project team, performing calcualtions for different scenarios to be able to decide on the most efficient and cost-effective solution for the project.





