

# West Ruislip Portal

**Customer:** Skanska, Costain and STRABAG JV

**Location:** Euston, London

**Products:** Superslim, Alform Beams, Megashor, Tubeshor 1060

## Case Study

### ALTRAD RMD KWIKFORM SUPPLIES ABOVE AND BELOW GROUND TEMPORARY WORKS FOR HS2'S WEST RUISLIP PORTAL

Altrad RMD Kwikform (Altrad RMDK) has supplied above and below ground temporary works to assist primary contractor Skanska, Costain and STRABAG (SCS) joint venture (JV) with the construction of HS2's West Ruislip Portal, demonstrating its engineering expertise to increase project productivity.

SCS JV is working together to deliver HS2 along the final 26.4km of HS2's journey to its southern terminus in Euston. The West Ruislip Portal is a vital part of the HS2 project, marking the transition where the trains will eventually emerge from underneath the capital city to continue through the country above ground.

### Above Ground Solution

Temporary works were required to support the walls for the opening of the launch chamber and the transition from underground to above ground. Altrad RMDK specified a bespoke formwork solution for the base, capping beam, headwall, liner walls and side walls, and Superslim Alform single sided formwork was used to cast the base slabs.

While forming the capping beams, the system was ganged together and craned into place, with a dummy tie solution, which meant using an anchor in the previous pour along with raking props to restrain the concrete pressure.

The 10m high wall was completed in five pours, which meant the team could utilise the Superslim and Alform system to complete the headwall construction. The liner walls started at 10m high reducing to approximately 3m as they exited the chamber and had to be cast in single pours 20m in length.

Due to limited man drilling hours allowed, Altrad RMDK proposed a single sided solution utilising Megashor, a versatile ultra-heavy-duty modular shoring and propping system designed for high axial loads. This was combined with Alform beams to offer benefits of strength, lightness and the ease of handling with consistency, versatility and durability. Diagonal anchors were cast into the base slabs along with a system of Megashor props to restrain the concrete pressure. Continued...





## Ground Shoring Solution

The walls at the entrance of the launch chamber also required support, with six 1060 Tubeshor props specified with specialist strain gages. The strain gauges consist of four monitors positioned close to the hydraulic jacks on the props to measure the average to determine the prop force.

To enable better thermal loading, four of the six props were also painted white. This simple adjustment allowed for greater thermal load, as the lighter colour conducts less heat in contrast to darker shades. Tubeshor props were also fitted with mechanical screw collars to prevent the hydraulic jacks from failing, and they were tightened to help prevent deflection and keep the prop secure.

To assist with the removal of the props, Altrad RMDK designed an innovative 250 mm burn-out pack. This allowed welders to easily release the props, meaning all six props could be fitted and extracted in just two days.

## Collaborative Working

Altrad RMDK demonstrated its engineering experience and worked closely alongside the SCS JV internal team to ensure designs were completed in accordance with strict HS2 standards. Selecting a single supplier for both the formwork and ground shoring product requirements helped streamline all aspects of the process - from initial BIM designs, through to equipment availability and delivery, saving significant time on the job.

All equipment used was also CE-marked, conforming with relevant EU health and safety and environmental protection directives. This saved the contractor up to two weeks of additional checks, reducing the overall project delivery duration and saving valuable costs.