

## Tideway Interception Tank

Customer: Ferrovial Construction & Laing O'Rourke (FLO JV)

Location: Chelsea Embankment, London

**Products:** Tubeshor 610 & GeoBrace 550

## Case Study

## ALTRAD RMD KWIKFORM PROVIDES GROUNDWORKS SUPPORT FOR TIDEWAY INTERCEPTION CHAMBER



London's Tideway project, also known as the "super sewer", will prevent raw sewage entering the Thames during heavy rainfall. The current, and mainly Victorian sewerage system currently overflows into the river and struggles to accommodate London's burgeoning population. The 25km sewer tunnel will span from Acton in West London to Beckton in the East and capture sewage overflows that would otherwise spill into the Thames.

## A robust solution

One of the key construction sites on this project – there are 24 in total – is Chelsea Embankment Foreshore. Led by the Ferrovial Construction and Laing O'Rourke (FLO) JV, this central section of the project includes the excavation of a 16.5m deep interception chamber, positioned under the course of the River Thames, which will divert sewage from the existing sewer system.

To support the construction of the chamber, Altrad RMD Kwikform has worked with FLO to engineer a heavy-duty propping system to support the retaining walls of the excavation. Groundworks equipment provided includes 610 diameter steel props (Altrad RMDK's Tubeshor 610) and a 550 bespoke section waler system (Altrad RMDK's GeoBrace 550).

One of the main challenges on this project was the confined space of the shaft, as well as providing a robust solution to support the secant wall. In addition, this section of the Thames is tidal which can result in level changes of over seven metres – leading to cyclic loading at 12-hour intervals.

Altrad RMD Kwikform's ground shoring equipment was chosen due to performance and sustainability factors.

Ajay Nagah, Engineering and Major Projects Manager (Ground Shoring) at Altrad RMD Kwikform, said: "We entered the frame relatively late in the design cycle where a traditional fixed structural steel solution had already been developed – which is usually the case with a job of this depth and duration. Continued...







We therefore had to match or exceed the performance of the existing solution to prevent time delays from significant re-designs and checks, whilst incorporating new features that would pose unique benefits to the site team.

"One such feature was the 'hybrid' hydraulic unit of the Tubeshor 610 props that telescopically extends to pre-load supporting members before being isolated mechanically.

"The hybrid ram ensures that all loads are transferred through the steel element of the prop only – providing high axial stiffness whilst mitigating the risk of hydraulic squash or failure whilst subject to high loads. All without the need for on-site welding'.

Other services offered to this project were 3D modelling and wireless load monitoring; with the latter giving an indication of actual prop behaviour compared to theoretical design values.

Ajay Nagah, continues: "Our E-Pin technology records actual prop forces and temperature over time and is displayed in graphical format via any web browser. Trigger levels are set as early warning indicators to ensure any major deviations from expected loads are captured early enough and worked around before they become real problems.

"It was also interesting to see the variable effects of tidal and thermal loading – with the latter representing over 50% of calculated prop forces which, if critical, can necessitate the need for thermal blankets to dampen thermal loading. This has been successfully implemented by Altrad RMDK on projects in the Far East and Australasia."

Altrad RMD Kwikform's visualisation software, LocusEye, also proved to be a useful tool for on-site discussions.

Matthew Wiseman, Divisional Digital Innovation Manager said: "Traditionally we could only share and view 3D models on PC, which limited usability to offices only. LocusEye allows us to provide a realistic 3D model of the temporary works which can also be viewed on a smart/mobile device. This allows us to provide user friendly navigation, augmented reality features and the relevant product information/animations when we click components."

John Breen, Commercial Director, concludes: "We are incredibly proud to be partners with FLO and Tideway on this prestigious project and welcome anyone to visit our premises and witness our offerings and capability first-hand."