CROSSRAIL C305 EASTERN RUNNING TUNNELS
CROSS PASSAGES

Client DSJV (Dragados – Sisk Joint Venture)
Site Location East London

The Crossrail C305 Project “Eastern Running Tunnels”, is part of the larger Crossrail east-west route across and below central London.

The 42km of bored tunnels forming the “Eastern Running Tunnels” are located below the busy streets of London where the tunnels will weave their way between existing underground lines, sewers, tunnels, structures and foundations from station to station at depths of up to 36m.

Geocisa UK installed monitoring equipment and monitored the stakeholders assets above the tunnel footprint at ground level during the advancing of the tunnelling works.

Within this footprint Geocisa encountered a variety of challenges including monitoring several live service tunnels (EDF, BT, Post Office) and numerous Network Rail and London Underground lines.

Monitoring System :

The structural monitoring of third parties assets and settlement control, within of the influence zone of 10 Cross Passages located along the tunnels route, was achieved by installing and monitoring the following devices and systems:

Cross Passages CP 5, CP6, CP8 & CP9

- 3D Geodetic Prisms for Building monitoring.
- Precise levelling survey to settlement control.
- Dewatering Real time monitoring.
- Electro levels beam Post Office Tunnels.

Cross Passage CP 10

- Network Rail Tilbury Viaduct, over 300 track levelling points have been monitored, installed 3 meters distance on single rail (cess rail & 6 feet rail) per track. Track Geometry Twist & Cant.
- Over 60 3D Geodetic Prisms for Manual monitoring installed at NR Viaduct.
- Precise levelling survey settlement control.
- Depressurization real time monitoring.

Kennington Park, 1-3 Brixton Road. SW9 6DE. LONDON
INFO: geocisauk@geocisa.com www.geocisa.com
INSTRUMENTATION AND MONITORING WORKS

Cross Passage CP 11
• DLR Limehouse Viaduct, over 250 track levelling points have been monitored, installed 3 meters distance on single rail (cess rail & 6 feet rail) per track. Track Geometry Twist & Cant.
• Over 200 3D Geodetic Prisms for Automatic monitoring ATS Leica TS30, DLR Viaduct.
• Precise levelling survey settlement control.
• Dewatering real time monitoring.

Cross Passage CP 12
• Over 30 3D Geodetic Prisms for Manual monitoring installed at buildings.
• Precise levelling survey settlement control.
• Dewatering real time monitoring.

Cross Passage CP 13
• DLR Blackwall Station Viaduct, Precise levelling survey settlement control on pillars.
• Over 100 3D Geodetic Prisms for Automatic monitoring ATS Leica TS30, installed at DLR Viaduct. Track Geometry Twist & Cant.
• Precise levelling survey settlement control.
• Dewatering real time monitoring.

Cross Passage CP 14
• DLR East India Viaduct, over 450 track levelling points have been monitored, installed 3 meters distance on single rail (cess rail & 6 feet rail) per track. Track Geometry Twist & Cant.
• Tiltmeters to control lateral movements at pillars.
• Precise levelling survey settlement control.
• Dewatering Real time monitoring.

Cross Passage CP 15
• Royal Victoria DLR, over 350 track levelling points have been monitored, installed 3 meters distance on single rail (cess rail & 6 feet rail) per track.
• Precise levelling survey settlement control.
• Dewatering real time monitoring.

SAI Integrated Monitoring Management System
The impact of the works on the various structures was evaluated by our monitoring team who processed, reported and analysed a large amount of data. If the values exceeded the predefined trigger levels the system automatically raised an alarm which was communicated via email and mobile SMS to the subscribed users.

The in-house developed, specialist software is capable of displaying the data in real time, fed by the automatic systems, and of calculation (Twist, cant, lateral displacements, relative displacement, slope etc.). The results were accessible to the client via a password protected web site developed for the project.

A real time image of the progressing tunneling and its associate zone of influence allowed the client to make fully informed decisions as necessary.

Reporting
Every 12 hours a report was produced and presented to the client and relevant stakeholders during the Shift Review Group meeting (SRG). weekly reports were also produced.