



Crossrail C501 Liverpool Street Station, London, UK



PROJECT SUMMARY

NAME: C501 Liverpool Street Station
(Advanced Works Piling & Diaphragm Walling - Moorgate Shaft)

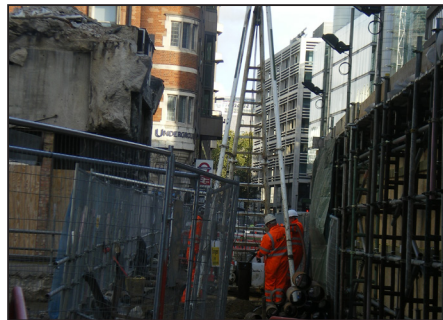
YEAR: Autumn-Winter 2011

CLIENT: Crossrail

MAIN CONTRACTOR: BAM Nuttall/Kier JV

INSTRUMENTATION SPECIALIST: Getec UK

INSTRUMENTATION SPECIALIST: Mott Macdonald Ltd



OVERVIEW

Crossrail delivers a high frequency, high-capacity service to 37 stations linking Maidenhead and Heathrow in the west, to Shenfield and Abbey Wood in the east via 21 km of new twin-bore tunnels under central London. It is estimated an additional 1.5 million people will be within 45 minutes commuting distance of London's key business districts. Advanced station works were carried out for the Moorgate shaft to provide ventilation and emergency access to the western end of the new Crossrail Liverpool Street station.

Work included the construction of a diaphragm wall and the removal of existing large diameter piles within the excavation.

In order to protect the Grade II listed buildings immediately adjacent to the shaft boundary at 8 Moorfields and 87 Moorgate, a steel frame was installed within the buildings to prevent structural damage during construction of the shaft.

MONITORING

Due to the close proximity of existing buildings, Moorgate and London Underground extensive monitoring is required under Crossrail document C138-MMD-C2-DDA-C101-Z-01011/2 Instrumentation & Monitoring. Monitoring, required as part of Asset Protection as well as design validation and construction safety, was carried out by instrumentation specialists Getec UK.

As part of the first phase of monitoring a series of vibrating wire piezometers, and inclinometer casing were installed prior to the diaphragm guide walls being installed.

Initial readings from both sets of instruments were taken to ascertain the base level readings.

Further instrumentation to be installed included In-place inclinometers, magnetic settlement systems, additional VW piezometers, VW strain gauges and a data logging system.

PRODUCTS USED

VW piezometers

Used to monitor pore water pressures in and around the excavation.

Portable MEMS inclinometer

Used to measure lateral displacement of ground behind the diaphragm wall.

Inclinometer casing

Used in combination with the portable vertical inclinometer.

VW 2106 readout

Measures all types of vibrating wire instruments.