

Channel Tunnel Rail Link 105

St. Pancras, LONDON - UK

Project Wide monitoring of surface and sub-surface structures

SolData Limited were awarded the monitoring contract for Channel Tunnel Rail Link 105 in 2001. The project comprised a varied selection of surface and sub-surface structures that required a combination of real-time and manual monitoring.

Of these structures, the most significant was St. Pancras Station, a grade 1 listed structure, protected under the watchful eye of English Heritage.

In order to confirm the stability of the station, and more importantly, the Barlow Shed, a variety of instruments were installed. These included a number of CYCLOPS systems, strain gauges, tiltmeters and the new Arianne automatic distance measurement system.

The instrumentation demonstrated that the Barlow Shed was subject to large diurnal movements, and the ability to accurately model the daily movements of this vast wrought iron structure allowed the designers to refine the interface design for the structure at an early stage, therefore avoiding complications later on, and ensuring that the construction programme was not affected.

The contract included the construction of a brand new underground station for the Thameslink 2000 rail services, constructed in close proximity to the Barlow Shed. This structure was monitored with inclinometers and strain gauges connected to dataloggers that would transmit the data back to the office via a radio link.

Another complex operation included the construction of 9 piles, within 2m of London Underground's Northern Lines and Piccadilly Loop, an operation that was carefully managed using the installed Geoscope software. The tunnels were monitored in real-time using a variety of tiltmeters and electrolevels, observing any longitudinal or circumferential tilt of the tunnel lining, ensuring that the already tight kinematic tolerances were not breached.

All data was processed automatically within the monitoring control office and stored on a central dedicated server. The data was accessible via the internet which allowed the client immediate remote access via secure web access at any time.

QUICK FACTS

- 7 No. CYCLOPS monitoring 650 prisms.
- 120 No. surface mount strain gauges.
- 98 No. Uni-axial Tiltmeters.
- 34 No. Electrolevels.
- 5 No. Displacement Transducers.
- 4 No. Arianne Systems.
- Complete on-site weather station.
- Pager, visual and audible alarms.
- Remote archiving of all data on secure servers at SolData HQ.



CLIENT :	COSTAIN O'ROURKE BACHYJ.V.
CONSULTANT :	RAIL LINK ENGINEERING
PROJECT DURATION :	JUNE 2001 – JUNE 2007
SCOPE OF WORKS :	
<ul style="list-style-type: none"> • Design, Installation, Commissioning and Maintenance of all monitoring systems. • Software programming including development of automated macro driven spreadsheets. • Rapid technical maintenance response from SolData's London offices. 	