

THE SHARD OF GLASS

LONDON BRIDGE, LONDON - UK

Real Time Structural Monitoring of Metro during Skyscraper Construction

The Shard of Glass will be a significant landmark on the London skyline. Due for completion in 2012, this mix use iconic structure will stand 310m tall. When completed, this building will be the tallest in the United Kingdom and one of the tallest in Europe with a total of 87 floors.

The Shard will sit at the same location as the existing Southwark Towers, a 24 storey 1970's office block. The foundations of the Shard sit immediately above and adjacent to one of London's major transport hubs, London Bridge Station.

In order to determine the performance of both London Underground and Network Rail assets, an extensive monitoring regime was designed and introduced over the period of demolition and construction. Escalators, running tunnels, pedestrian passageways and the 'vaults' market hall required monitoring in real time to determine infrastructure performance and allow normal operation of the railway network.

A detailed predicted settlement footprint meant that neighbouring building facades, including the world famous Guys Hospital, office blocks, viaduct arches, also required real-time monitoring. In addition the basement development of the Shard was also monitored to determine the structural performance as it was constructed

The fully commissioned system consists of 19 Robotic Total Stations (Cyclops) working in networks, 207 electrolevel beams, 17 biaxial monopod tiltmeters and 19 inclinometers. Complimenting the automated monitoring is a regime of full-time manual monitoring of other structures using traditional surveying methods.

All of the data from the various automated instruments and manual surveys is collected and processed within SolData's Geoscope software package, enabling 'real-time' visual representations of any structural movements recorded. A report is generated on a weekly basis and distributed to the client's team. Sent out weekly with all these results, the client also has access to the real-time data on Geoscope via the web.



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| CLIENT: | TEIGHMORE |
| CONSULTANT: | WSP |
| PROJECT DURATION: | 2008 – 2012 |
| SCOPE OF WORKS: | |
| <ul style="list-style-type: none">• 19 nos. Cyclops• 224 nos. Electrolevels, Tiltmeters & Bi-axial Monopods.• 19 nos. Inclinometers• Geoscope Web 'real-time' data acquisition, presentation and management software.• Full time project management and client liaison services. | |