



## Guy's Hospital, London, UK



### PROJECT SUMMARY

PROJECT: New Cancer Centre at Guy's

YEAR: 2013

CLIENT: Guy's & St Thomas' NHS Foundation Trust

CONTRACTOR: Laing O'Rourke

INSTRUMENTATION SPECIALIST: Select Plant Ltd



### OVERVIEW

A new state-of-the-art Cancer Centre, 14 storeys high, is being constructed at Guy's Hospital which will act as a hub for south east London and will provide specialist cancer services, training, development and research.

The initial phase required two existing buildings to be demolished followed by an extensive piling program with piles being installed up to 42 metres deep. A retaining wall around the excavation has been constructed using secant piles with internal ground force props used for support during the 4.5 metre excavation to complete the concrete base.

During preliminary excavation several artefacts were discovered including pottery, coins and wine bottles from both pre-medieval and post-medieval eras which will be held by the Museum of London Archaeology (MOLA). Due to the deep basement being excavated adjacent to an existing wing of the hospital it was necessary to monitor tilt of the existing structures, together with the excavation itself.

### MONITORING

Tilt Meters with built-in data logging capability were installed on several walls to download data via a USB connection to a PC or PDA.

Some Tilt Meters were required on the roof of the existing building adjacent to the excavation. Due to restrictions in access to the roof, data retrieval posed a major problem. Geosense therefore proposed a Wi-SOS 100 D2W (direct to web) wireless system which meant that once the Tilt Meters were installed no further access to the roof would be required. Each node has an integral SIM card allowing data from the Tilt Meter to be sent directly to the Wi-SOS Webcentre

To allow measurement of deflection on the wall during excavation, inclinometer casing was installed at five locations within the secant pile wall and measurements taken using inclinometers. Additional monitoring of the capping beam and surrounding structures was undertaken using traditional survey methods with targets and BRE sockets.

### PRODUCTS USED

#### MEMS In-place tilt meters

Used to monitor movement throughout the building.

Inclinometer casing

To allow the measurement and monitoring of lateral displacement.

#### Tilt Logger

A combined tile meter and data logger in one housing available in uniaxial or biaxial versions.

#### Wi-SOS 100

Wireless Sensor Observation System for single sensors to upload remotely data direct to the internet. Central data acquisition logger fitted with SIM card to provide GPRS connection for remote access via the internet. It can be configured over air via an Android device and includes sampling intervals and sensor configuration. Data can be either downloaded directly or forwarded to any FTP address.