



### Doha New Airport Station, Qatar



#### PROJECT SUMMARY

NAME: Doha new airport station box

DATE: 2011

MAIN CONTRACTOR: Group Five Construction

CLIENT: Qatar Civil Aviation Authority

INSTRUMENTATION SPECIALIST: W J Groundwater

CONSULTANT: Mott MacDonald



#### OVERVIEW

A massive construction project is under way in Qatar to build a new airport to meet the rapid growth in air traffic that has resulted from the country's economic boom. The new airport is being built in phases on a 22 sq km site adjacent to Doha's existing airport, with half the site being on reclaimed land.

Part of the project includes building the concrete shell for a railway station terminal that in the future will connect the new \$11 Bn (USD) International Airport to rail stations in central Doha.

The underground box that will house the future station is 20 metres deep and 300 metres long.

#### MONITORING

Monitoring lateral movement of the diaphragm walls and strain within the internal props was required to verify the design and ensure the safety of the construction.

A total of 288 in-place MEMS inclinometers (digital bus) were installed within inclinometer casing to accurately measure and obtain a complete displacement profile of the diaphragm wall. The use of a bussed system meant that significant savings on cable could be made.

266 surface mount VW strain gauges were welded along the internal props to measure strain in order to allow the force in the struts to be calculated. All instruments performed well in the harsh environment of the Middle East where daytime temperatures exceeded 50°C and provided reliable and stable results over the course of the project to the satisfaction of the main contractor, consultant and client's representatives.

#### PRODUCTS USED

##### **MEMS In-place inclinometers (digital bus)**

To measure lateral movement of the diaphragm wall.

##### **Inclinometer casing**

Quick jointing casing to allow in place inclinometers to be installed.

##### **VW strain gauges**

For measuring prop loads.

##### **GeoLogger**

Automatic data logging system to monitor, store and send data to an internet-based data visualisation system.