MARINE DOCK CONSTRUCTION, UK

STRUCTURAL MONITORING

Key achievements

- **Accurate, high-frequency, long-term automated instrumentation system.**
- **High-profile project with demanding specification.**

The Project

Significant construction work was necessary to extend a 160-year-old dock to accommodate larger ships. The project also required the demolition of an existing jetty before the dock could be developed, and a monitoring scheme was required to measure movement of the aging dock wall acting as a base for the current jetty.

The Challenge

A monitoring scheme must be designed to provide detailed measurement of the old dock wall underneath the jetty while still ensuring undisrupted construction progress.
Additionally, new floating spacer units required very high frequency tilt monitoring with low-latency data collection.

The Solution

A combined monitoring scheme was designed, comprised of Tiltmeters, Vibration Sensors, and 3D prisms measured by an Automated Total Station (ATS).

The concrete of the jetty was cored down to expose the dock wall underneath and prisms were installed into the dock using long brackets protruding above the surface of the jetty. The ATS was installed on an elevated concrete platform to guarantee visibility of the prisms.

Automated survey works were originally planned to be undertaken in hourly cycles, however, following a change to the project requirements, the measurement cycles were increased to 10-minute intervals.
The raw data was automatically post-processed and then reported via our QuickView online visualisation software. Tilt data was collected at 1 second frequency using a network of wireless tiltmeters installed onto the spacer units.

Application
Structural monitoring

Technique
3D Displacement monitoring
Vibration Monitoring
Tilt monitoring

Market
Maritime
Infrastructure

Project Duration
<1 Year

Instrumentation
Automated Total Station
Vibration sensors
Tiltmeters

Keller companies
GEO-Instruments

GEO INSTRUMENTS

Geotechnical & Structural Monitoring Solutions

KELLER