



Key achievements

- Installation of a real time autonomous safety critical monitoring system via boat access.
- High frequency data analysis during sand compaction trials.
- Additional sensors supplied and added to the system due to successful monitoring and evolving project requirements.

The Project

The client is working to reclaim the land from the River Thames to create a new port facility on the existing DP World Port site. To complete these works tubular piles were installed into the riverbed from a jack-up barge to create a barrier against the water. Within this barrier a sand bed is to be deposited and vibro-compacted to form a solid dock surface for container cranes and vehicles.

The Challenge

A safety critical monitoring system was required to monitor the displacement of the sheet pile wall during the compaction works. This monitoring scheme would require sensors to be installed onto the wall without permanent fixings and allow for their relocation to follow along with the progress of vibro-compaction rigs. A The system needed to provide high frequency data to ensure the safety of the vibro-compaction works and any movements of the sheet pile wall were reported quickly to site teams.

The Solution

A network of wireless tiltmeters was designed to monitor the displacement of the sheet pile wall, these tiltmeters were installed using magnetic brackets which could be easily installed onto and removed from the steel sheet piles. The tiltmeters supply readings at frequencies up to every minute which exceeded the required specification for the vibro-compaction trial.

Additionally, the GEO-Instruments QuickView software was supplied to easily manage trigger alarms, alert emails, and daily automated reports to the client and site team. The software also allowed for further calculations to be applied to recorded data. In this case displacements of top of the wall were calculated using tiltmeter angle measurements.

Application

Sheet Pile Wall deflection monitoring

Technique

Tilt Monitoring
Deflection Monitoring

Market

Ports
Infrastructure

Client

McLaughlin & Harvey

Project Duration

Ongoing

Instrumentation

Wireless Tiltmeters

Keller companies

GEO-Instruments