



Geo and Aarhus University, Denmark



### PROJECT SUMMARY

PROJECT NAME: Performance Of Vibrating Wire Piezometers  
In Very Low Permeable Clay

PROJECT DATE: 2017

CONSULTANT: Geosense



### OVERVIEW

Previous research into pore pressure development in stiff, over consolidated clays in relation to pile driving had encountered unexpected data with piezometers fitted with HAE (high resistance to air entry) filters. The ones fitted with LAE (low resistance to air entry) performed successfully.

Unexpected data from other piezometers fitted with HAE filters had also been experienced by Geosense and other manufacturers.

It was thought that the main reason for the piezometers not to perform well was unsatisfactory filter saturation.

It was therefore agreed that various different saturation techniques be investigated to see if this was the reason for the unexpected data.

For full details see Performance Of Vibrating Wire Piezometers In Very Low Permeable Clay.

### MONITORING

To investigate the performance of vibrating wire piezometers under different installation methods, with different filter types and installed in grouts of different compositions.

Five different saturation techniques for HAE filters were used:

- **Saturation method 1 (boiling)**
- **Saturation method 2 (hand-pump)**
- **Saturation method 3 (vacuum chamber)**
- **Saturation method 4 (Pre-saturation with saturation pump)**
- **Saturation method 5 (Pre-saturation with special cap)**

Saturation of LAE filters was carried out by simple immersion in de-aired water.

The installations of VW piezometers with LAE and HAE filters in very low permeable clay in this and on-going parallel studies have identified serious problems with the functionality of VW piezometers with HAE filters in fully grouted boreholes whereas LAE filters perform well.

### PRODUCTS USED

#### **VWP-3000 with HAE filter**

Standard construction VW piezometer with high air entry filter.

#### **VWP-3000 with LAE filter**

As above but with low air entry filter.

#### **VWR-1 Readout**

A compact manual readout unit which can be used with all types of vibrating wire sensors.