

# Waddinxveen test 2008

## Site description

The test location was situated near Waddinxveen in the western part of the Netherlands. Figure 1 shows the result of a CPT at the test location. The surface level lies at NAP - 5.07 m (NAP = Dutch reference level). Below grade, Holocene peat and clay layers are found down to a level of NAP -12 m, with the Pleistocene sand layer underneath. This layer consists mainly of medium fine sand. The phreatic ground water level and the piezometric head in the Pleistocene sand layer are found at about NAP -6 m.

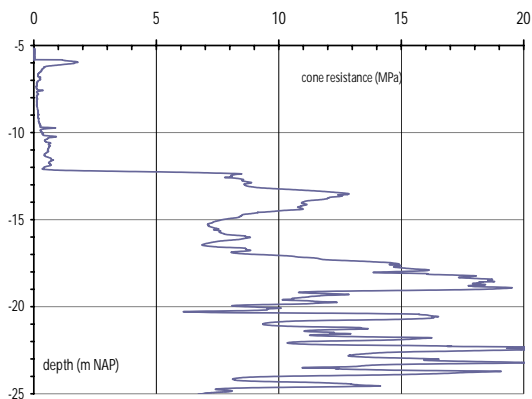


Figure 1 Cone resistance at site

## Test execution

Two square prefabricated concrete piles (350 x 350 mm<sup>2</sup>) were driven about 6 m apart to a level of NAP -15.35 m.

Both piles had been instrumented (before pouring concrete) with strain gauges at three levels: 0.5 m below the head of the piles, 9.5 m below the head of the pile (which will coincide with the transition between Holocene and Pleistocene layers NAP -13.95 m) and at 0.5 m above the pile toe (two strain gauges at each level). At the toe of both piles, a BAT sensor was installed to measure the pore pressures during the RLT tests. The Bat sensor offers the possibility to install the tip before pile driving and the measurement device after pile driving. In addition, a piezocone was installed after pile driving in the Pleistocene sand layer at a distance of about 0.7 m from Pile 2 at NAP -15.35 m. Based on an analysis of the CPT data according to Dutch code NEN 6743, the predicted ultimate bearing capacity was about 1340 kN and 1318 kN (Pile 1 and Pile 2 respectively).

Both piles were tested twice: pile 1 was first subjected to an RLT and then an SLT, while for pile 2 this sequence was reversed. The SLT was executed according to EC7/NEN 6745. The piles were loaded by means of a hydraulic jack using water tanks as ballast. The load step was 140 kN for Pile 1 and 175 kN for Pile 2.



Figure 2 The Statnamic apparatus (RLT) and the counter weight (SLT)

## **Available data**

For both piles

- CPT for both locations
- Standard results of SLT (Load-displacement curve)
- Standard results of RLT (Load, displacement and acceleration on time)
- Strain measurement at three levels in the pile (head, start bearing layer and toe) on time

For one pile

- Pore water pressure measurement in the soil

## **Contract references**

Delft Cluster project 01.30 WP 3

CUR committee H410

Deltares projects (413530 / 1001055)

## **Further reading**

Rapid load field tests interpreted with the new Guideline

P Hölscher , H.E. Brassinga, A.F. van Tol, P. Middendorp, E. Revooort

Proc. 17th international Conference on Soil Mechanics and Foundation Engineering, 5-9 October 2009, Alexandria, Egypt

## **Information**

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