Measured effect of sheet piling on settlements

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Proposed Discussion Session: 2.1, Effect open excavation on nearby structures and facilities

During vibratory installation and removal of sheet piles surface settlements will occur. Presently a model is being developed to predict those settlements. As part of the research a well instrumented field test has been designed and executed. During the test both steel sheet piles and concrete elements are installed and removed. The paper will describe the test and the used instrumentation. Attention will be focussed on the measured settlements, both at surface and at depth.
The measured settlements will be presented and discussed. Two components are considered to be responsible for the settlement. The first is densification of the soil and the second is the installed or removed volume of the sheet piling. From a comparison of the volume of the settlement trough after installation and after removal conclusions will be drawn regarding the contribution of both components to the settlement. It is concluded that in the test for steel sheet piling most densification occurred during installation and most settlement during removal. The validity of this observation for actual building activities will be discussed. Differences in measured settlements due to Z-profiles, U-profiles and concrete elements will be commented.

Result of the test is an increased understanding of the mechanisms resulting in settlements and a well documented case for validation of numerical models.

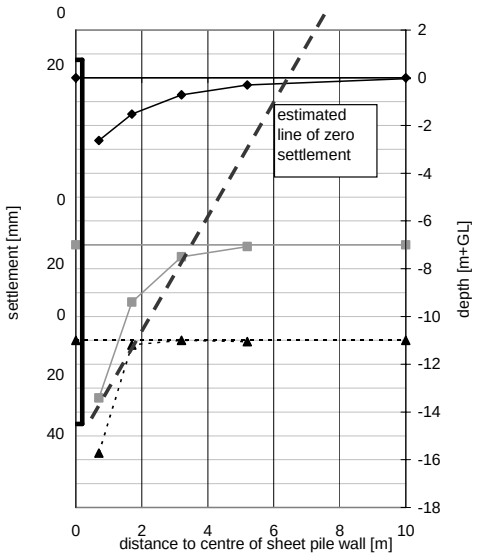

Figure 1 Measured settlement at surface and at depth

References
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