

Title

Guideline on the interpretation of Rapid Load Testing on piles

Client	Project	Reference	Pages
Delft Cluster	1001055-016	1001055-016-GEO-0002-	110

Summary

A Rapid Load Test (RLT) is an economical and practical alternative for a Static Load Test (SLT) for the determination of the initial stiffness and bearing capacity. However, the application of RLT is hampered by uncertainty about the interpretation of the test results. This guideline attempts to offer clear guidance on the available analysis techniques and their reliability.

The guideline is related to the draft standard on the execution of a Rapid Load Test, which is under discussion by working group 4 of TC 341 of CEN.

This guideline can be used in two ways:

1. Straight forward interpretation of test results. (chapters 1 - 3).
2. Interpretation with additional background information about the possibilities and limitations (Chapters 4-8).

The chapters 1 and 2 deal with the execution of the test and the presentation of the results. Chapter 3 gives a general overview of existing interpretation methods. This chapter refers to step-by-step descriptions of the two advised interpretation methods.

The aspects which are important for the interpretation are discussed in chapter 4. It turns out that the inertia of the pile should be taken into account. In clay soil the rate effect (the dependency of strength and stiffness on loading rate) must also be taken into account. In sand and silt the generation of pore water pressures during an RLT plays a role. The velocity of the RLT is such, that the reaction of sand and silt might be considered as partially drained. The guideline indicates how these effects can be compensated to obtain the static resistance in the final results.

Chapter 5 presents two interpretation methods:

- A method for piles in sand, gravel, silt and piles on rock. This method is a simplified version of the unloading point method (UPM), originally developed in the Netherlands.
- A method for piles in clay. This method is a simplified version of the Sheffield method (SHM) originally developed in the U.K..

This chapter gives a precise description of both methods combined with an example. For practical use, the methods are described in a step-by-step scheme in an Appendix of this guideline.

The remaining part of the guideline is concerned with aspects of RLT and the use of RLT test results:

- The available data which can be used for further validation of the interpretation methods.
- The recommended partial factors that fit within the framework of Eurocode 7 part 1.
- The influence of special situations, such as open ended piles and installation effects.