Vertical displacements of the ground around footing being pulled out

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3DSensor: Case Study

This project aimed to determine the potential slip plane that occurred during the concrete footing pullout. For this purpose, 3DSensors (DFOS displacement sensors) were installed around the structure in two planes, and vertical displacements were measured. Thanks to the cutting-edge technology of 3DSensors, an advanced analysis of the interaction between the footing and the surrounding ground were possible without any distortions and reinforcing effect in the ground.

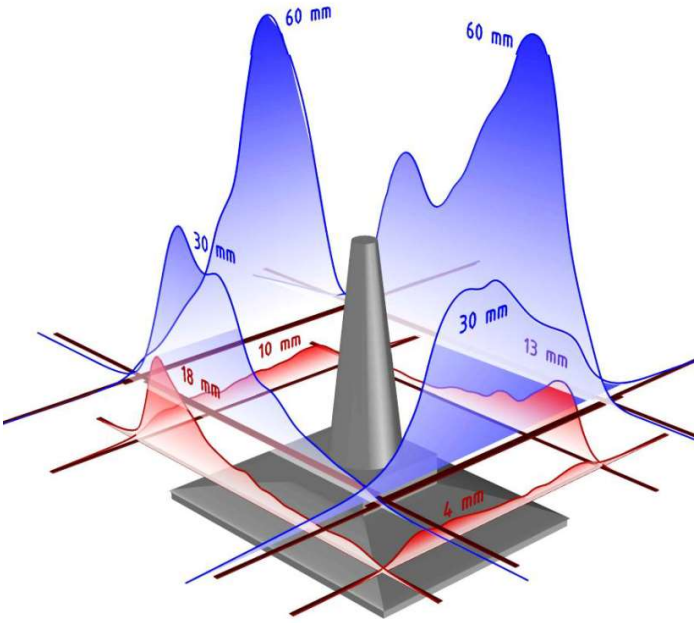
Benefits of application

- **Fast and easy installation** of lightweight sensors, standard compacting feasible
- **Flexible sensors** do not cause distortions or reinforcing effects in the ground
- **Results** seen as **displacement values** thanks to a data conversion algorithm
- Nervous system in the ground with **results unreachable for conventional sensors**

Example results

Two layers of 3DSensors were installed, parallel to the edges of the footing at 80 cm and 160 cm above the footing base. The structure was pulled out of the ground through a specially designed stand while strain measurements were taken step-wise with 3DSensors.

A designed algorithm for data conversion allowed to direct determination of vertical displacements in both layers around the footing. The figure presents the spatial visualization of example results expressed directly in mm for a chosen load step.



10 000 measurement points

72 m of sensing path

12 3DSensors

short term load tests

project **partner:** ENPROM®