

Vertical displacements of ground around footing being pulled out

3DSensor: Case Study

The aim of this project was to determine the potential slip plane which occurred during pullout of concrete footing. 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 was possible without any distortions and reinforcing effect in the ground.



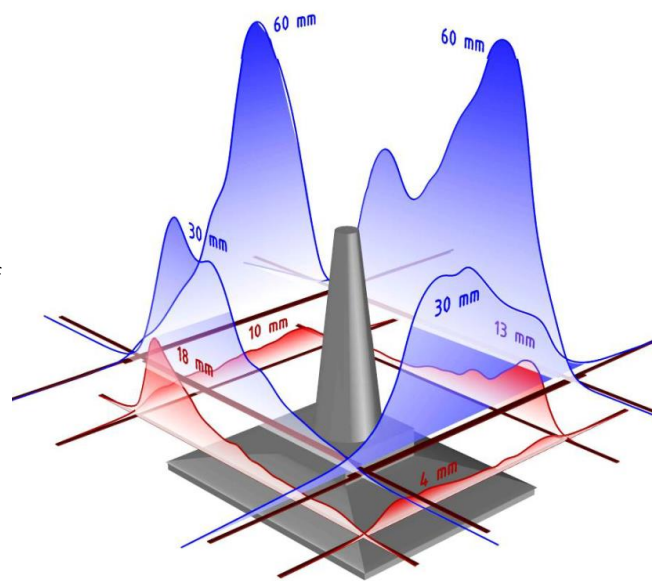
Benefits of application

- **Fast and easy installation** of lightweight sensors, standard compacting feasible
- **Flexible sensors** do not cause distortions or reinforcing effect in the ground
- **Results** directly 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. Spatial visualization of example results expressed directly in mm for a chosen load step is presented in the figure.



 **10 000** measurement points

 **72 m** of sensing path

 **12** 3DSensors

 **short term load tests**



project partner:

