Soft Ground Tunneling

Introduction

This example demonstrates the use of Phase$^2$ for the back analysis of a tunnel in soft ground.

The Aeschertunnel in Canton Zurich, Switzerland, a large non-circular shallow tunnel, was excavated with a top heading (75m$^2$) that utilized 35 sub-horizontal jet-grout columns for primary excavation support. The tunnel was designed to accommodate highway traffic with a completed cross sectional area of 135m$^2$. The tunnel was excavated in glacial till (a relatively dry medium-dense silty sand) at a depth that caused surface settlements.

A numerical back analysis was performed using the finite element program Phase$^2$. The back analysis procedure using Phase$^2$ was to vary the model parameters starting from a set of base parameters in order to get the best agreement between observed surface settlements and model settlements.

For details see the following paper:

Ground Deformations Above a Large Shallow Tunnel Excavated Using Jet Grouting