

Tailings Deposition and Excavation

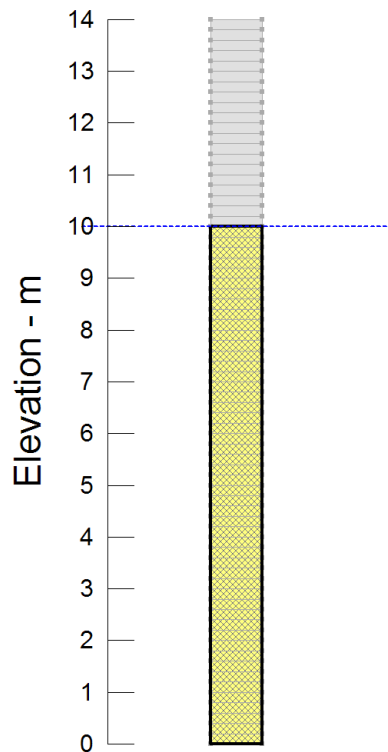
1 Introduction

This simple 1-D example is primarily intended for verification purposes. The primary objective is to check that the adding of materials together with a moving hydraulic boundary condition works properly, and that the procedure works properly when the added layers are removed.

This example should be studied after becoming familiar with the other complementary example called Sequential Tailings Placement.

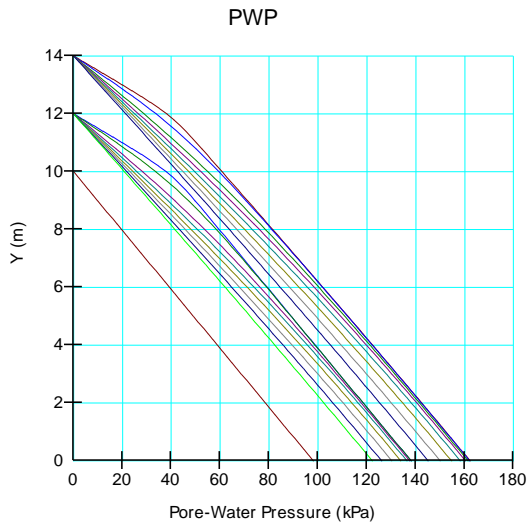
The example here consists of a 10-m high column. Two 2-m layers are then added, and later the two layers are removed. The watertable is always at the current ground surface. This means the hydraulic boundary condition moves with the various stages.

The material properties have been selected purely for illustrative purposes – they are not intended to represent any actual field condition.



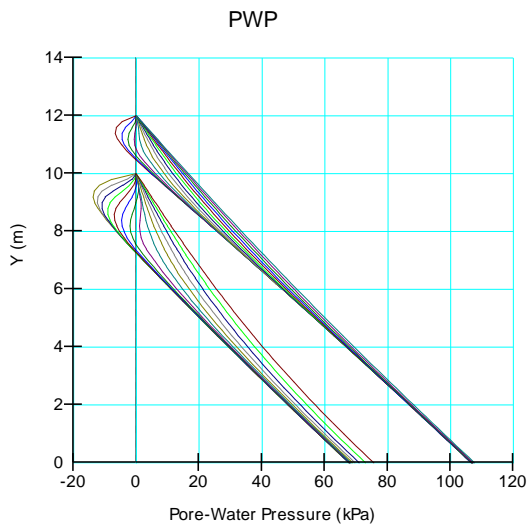
2 Loading stages

The following graph shows the buildup of the pore-pressures due to the loading, and then the subsequent dissipation. The most important observation is that the final pore-pressure distribution is hydrostatic depth. The implication is that a portion of the excess pore-pressure arising from the loading converts to a static pore-pressure because there is no under drain and because the watertable is always at the ground surface.



3 Unloading stages

The next graph shows the case when the two layers are removed. Immediately after the unloading, the pore-pressure becomes negative, but then gradually migrates back towards the long-term hydrostatic condition.



The results all tend in the correct direction, verifying that SIGMA/W works as intended for these cases.