Lecture 7 - summary

Problem-schematic

Application: Stress distribution in foundation

BCs: Pressure at surface

Two soils – thus two domains with different density

Connection between domains: Stress vector continuity (used to obtain condition for stress tensor continuity)
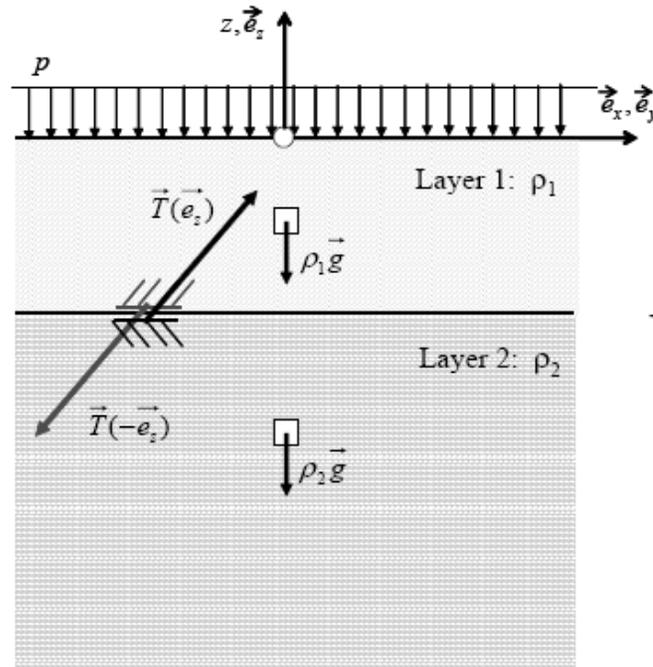
Solution
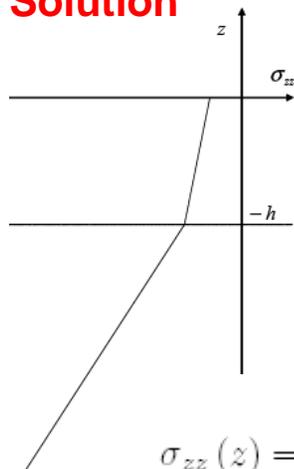
$$\sigma_{zz}(z) = \begin{cases} = \rho_1 g z - p; \ 0 \geq z \geq -h \\ = \rho_2 g (z + h) - \rho_1 g h - p; \ h \geq z \end{cases}$$

Note:

Problem can not be solved completely – 3 of the 6 stress tensor coefficients are undetermined

Reason: Missing information about material law –**statically indeterminate** system; EQ and BCs insufficient to close problem

Solution: Use material law (later in 1.050!)