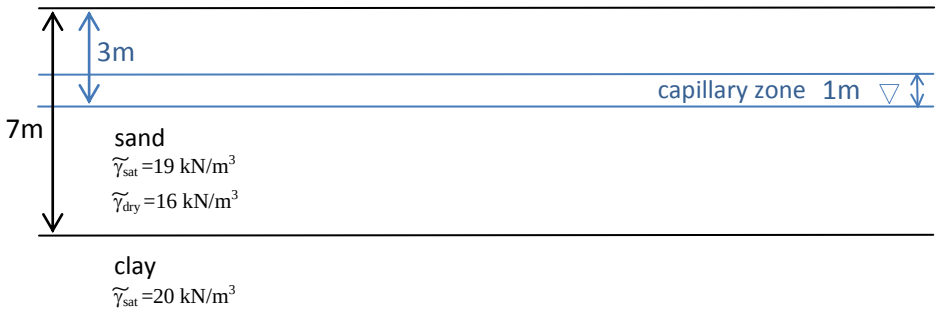
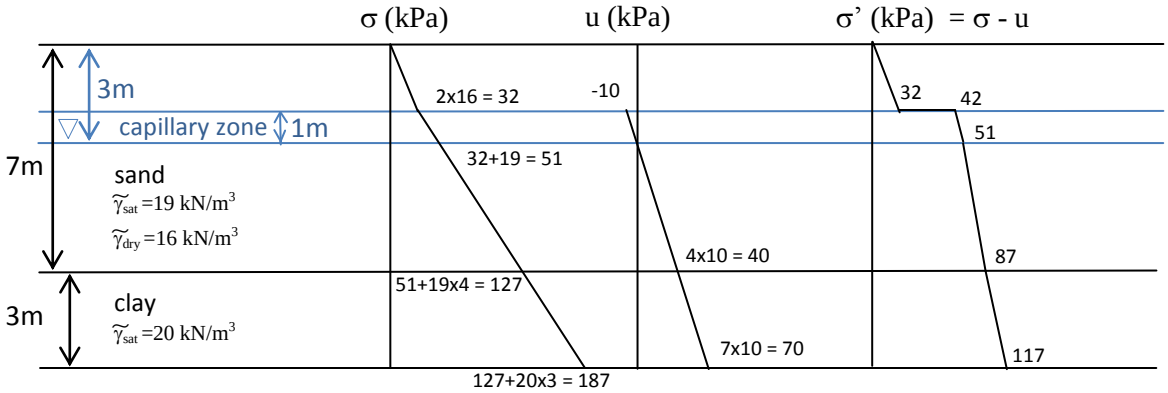
HOMEWORK 2 Solution

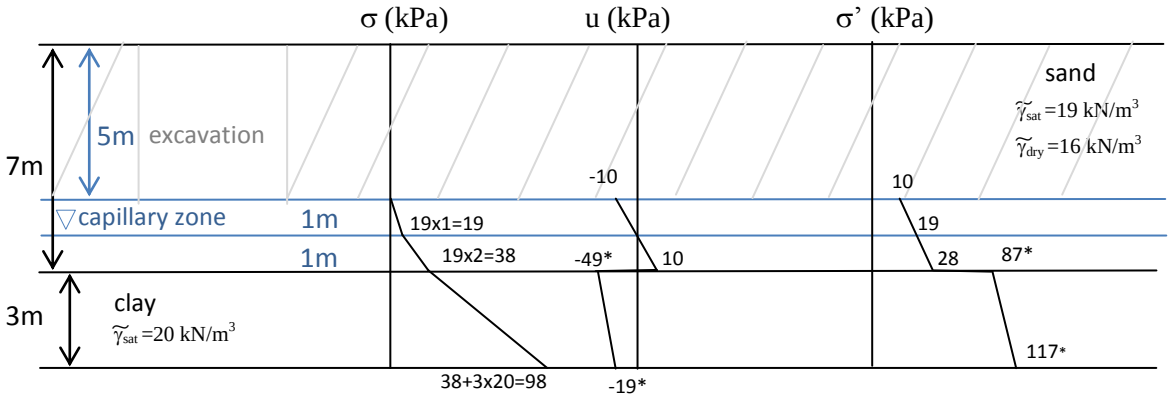
1)



a)

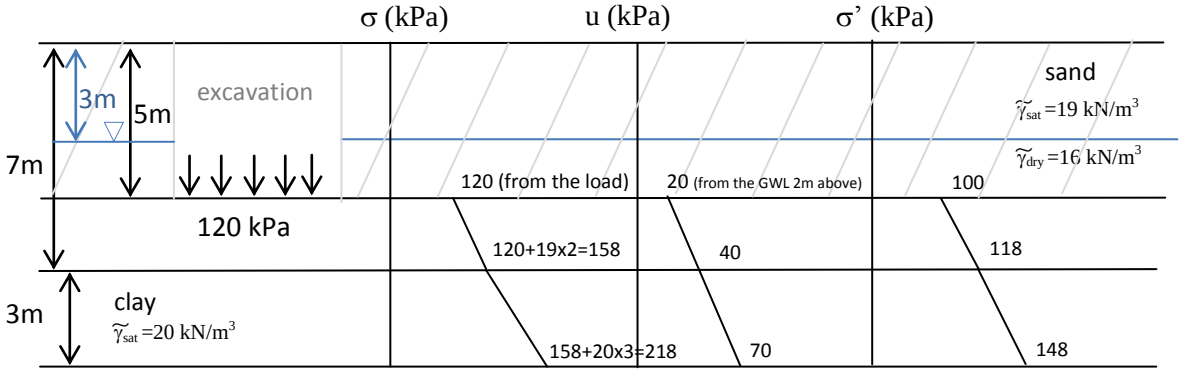


b) After dewatering and excavation:

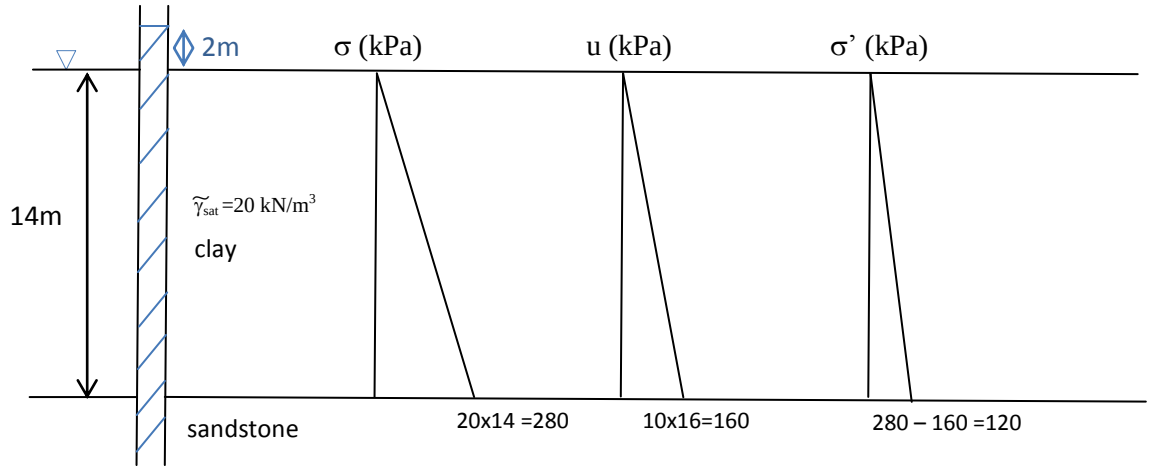


*For clay (undrained soil) same effective stress values as part a (before the stress change) are applied and pore pressure is calculated accordingly, as σ–σ' .

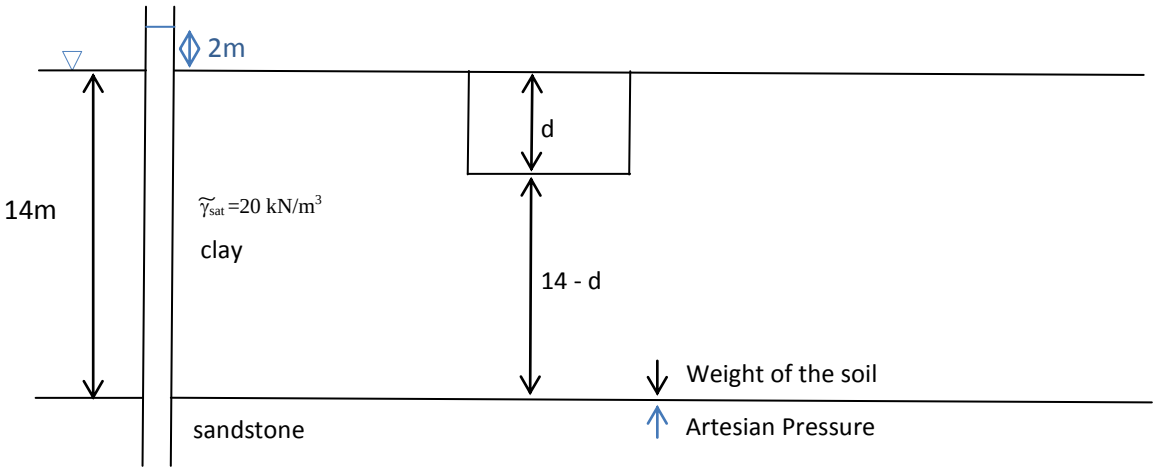
c)



2) a)



b)



In order to have a stable material, ($\sigma' > 0$) must be satisfied. As the σ' will vary linearly with depth and is zero at the surface (excavation base), we only need to check this criterion at the bottom of clay layer.

$$\sigma' > 0 \Rightarrow \sigma > u$$

$$(14 - d) \times 20 > 160$$

$$280 - 20.d > 160$$

$$120 > 20.d$$

$$d < 6m$$