Quiz

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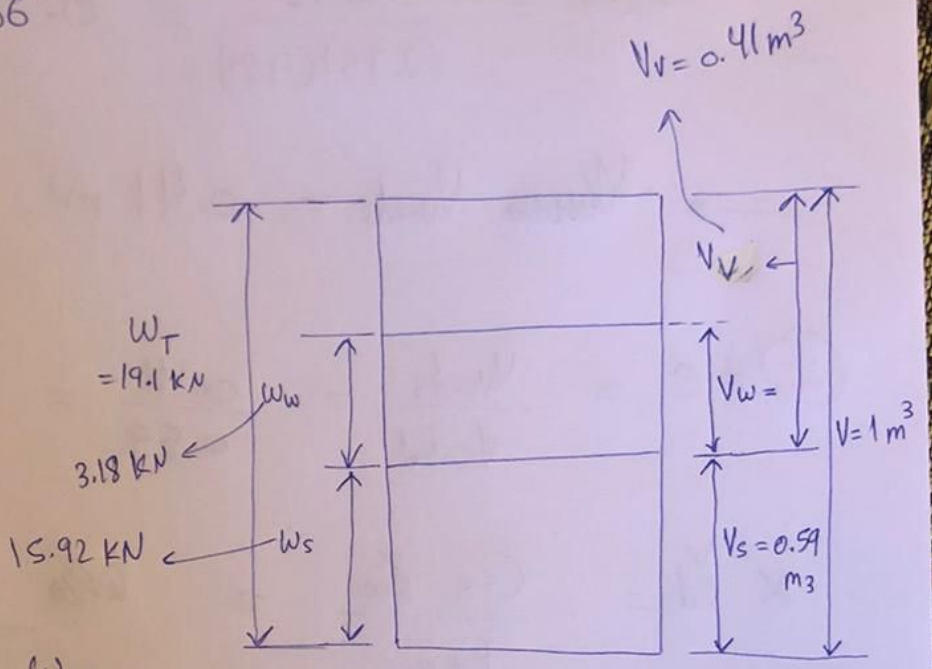
Q:-)

$\gamma_{moist} = 19.1\ KN/m^3$

$w\% = 20\%$

$G_s = 2.75$



① $\gamma_{moist} = \frac{W_T}{V_T}$

→ $W_T = 19.1\ KN$

$w\% = \frac{W_T - W_{solid}}{W_{solid}}$

$0.2\ W_s = 19.1 - W_s$

$W_s = 15.92\ KN$

→ $W_w = 3.18\ KN$

$$G_s = \frac{\gamma_{solid}}{\gamma_w} = \frac{W_s}{V_s(9.81)}$$

$$V_{solid} = \frac{15.92}{(2.75)(9.81)} = 0.59\ m^3$$

$$\longrightarrow V_{voids} = 0.41\ m^3$$

(2) $$e = \frac{V_{voids}}{V_{solid}} = \frac{0.41}{0.59} = 0.694$$

$$\gamma_d = \frac{G_s\,\gamma_w}{1+e} = \frac{2.75(9.81)}{1.694}$$

$$\longrightarrow \gamma_d = 15.92\ KN/m^3$$

$$S\,e = G_s\,\gamma_w$$

$$\longrightarrow S = \frac{2.75(9.81)}{0.694}$$

$$\longrightarrow S = 38.7\ \%$$

(3) $$\gamma_{dmax} = \frac{W_{dry}}{V_T} = \frac{15.92}{1}\ KN/m^3$$