Homework #2

Shrinkage limit 가 $w_s = \frac{\gamma_w V}{W_s} - \frac{G_w}{G_s} \left(= \frac{W_w}{W_s}\right)$ *와 같이 됨을 유도하시오.*

Homework #2 모범답안

Shirinkage Limit 유도

$$
\begin{aligned}
w_s &= \frac{W_w}{W_s} \\
&= \frac{\gamma_w V_w}{\gamma_s V_s} \\
&= \frac{\gamma_w (V - V_s)}{\gamma_s V_s} \quad \text{(Completely Saturated } V_a = 0\text{)} \\
&= \frac{\gamma_w (V - V_s)}{\gamma_w G_s V_s} \\
&= \frac{\gamma_w V}{\gamma_w G_s V_s} - \frac{\gamma_w V_s}{\gamma_w G_s V_s} \\
&= \frac{\gamma_w V}{\gamma_s V_s} - \frac{\gamma_w V_s}{\gamma_s V_s} \\
&= \frac{\gamma_w V}{W_s} - \frac{\gamma_w}{\gamma_s} \\
&= \underline{\frac{\gamma_w V}{W_s} - \frac{G_w}{G_s}}
\end{aligned}
$$