

Quiz 4

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(a) flow rate, $q = K H \frac{N_f}{N_D}$

$$= 3 \times 10^{-5} \times 11 \times \frac{4}{8}$$

$$= 1.65 \times 10^{-4} \text{ m}^3/\text{sec}$$

(b) Pore water pressure at C:

~~total head = 5 + 2 + 11/8~~

~~= 8.375~~

~~$P_{wp} = 9.81 \times 8.375 = 82.15875 \text{ kPa}$~~

~~at C: $h_c = 3 + 2 + \frac{11}{8} = 6.375 \text{ m}$~~

$P_{wp} \text{ at C} = 9.81 \times 6.375 = 62.53875 \text{ kPa}$

(c) Effective ^{stress} ~~length~~ at C.

$$\bar{\sigma}_C = 9.81 \times 2 + 18 \times 3 - 62.53875$$

$$= 11.08125 \text{ kPa}$$

$$\cancel{A_3} = A_1 = 262^\circ 47' 24''$$

(d) for instability:

$$\bar{\sigma}_c = 0$$

$$\text{PWP at } c: \quad h = 3 + 2 + \frac{5+h}{8}$$

$$h = \frac{45 + h_{\max}}{8}$$

$$* \bar{\sigma}_c = 0$$

$$9.81 * 2 + 18 * 3 - 9.81 * \left(\frac{45 + h_{\max}}{8} \right) = 0$$

$$h_{\max} = 15.04 \text{ m}$$