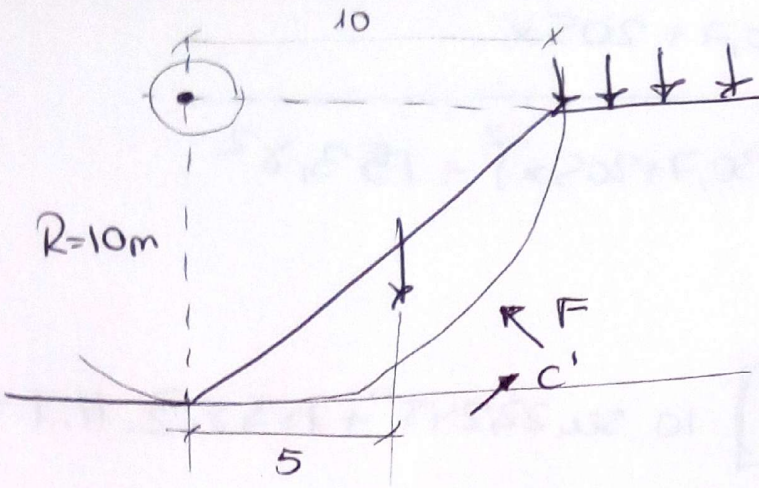
ESTABILIDAD DE TALUDES
ANA LOPEZ NAVARRO



$c' = 20 kN/m^2$
$\phi = 28°$
$\gamma_{ap} = 17 kN/m^3$
$FS = 1,3$

$\Sigma M_{res} = \Sigma M_{mov}$

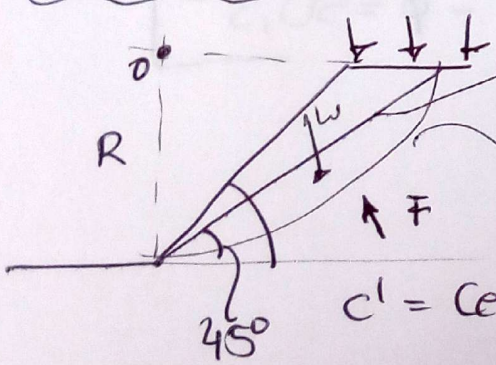
$\gamma_{ap} = 17 kN/m^3$
$c' = 20 kN/m^2$
$\phi = 28°$
$FS = FS_c = FS_\phi$

$\phi_e = \text{arctg} \frac{tg\phi}{FS} = \text{arctg} \frac{tg28°}{1,3} =$

$\phi_e = 22,245°.$

$Ce = \frac{c'}{FS} = \frac{20}{1,3} = 15,3 kN/m^2.$

Círculo de fricción:



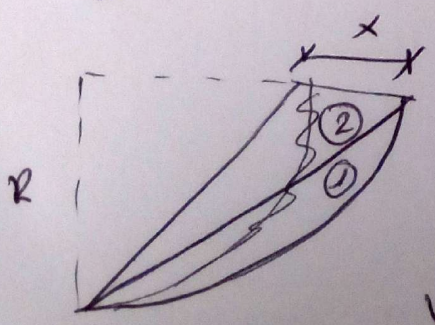
$L' = \sqrt{R^2+R^2} = 10\sqrt{2} = 14,14$

$L = \frac{\pi}{2} \cdot R = 5\pi = 15,7$

$c' = Ce \cdot L.$

$\Sigma M_O = 0$

$F_x \cdot R \operatorname{sen}\phi_e + C \times d = W \, R/2 + 120 \times \left(\frac{R-x}{2}\right)$



$A_{(1)} = \frac{\pi r^2}{4} - \frac{1}{2} r^2 = 28,5 m^2.$

$A_{(2)} = \frac{1}{2} r^2 - \frac{1}{2}(R-x)R = 5x \, m^2.$

$W = [A_{(1)} + A_{(2)}]\gamma = (28,5 + 5x)17.$

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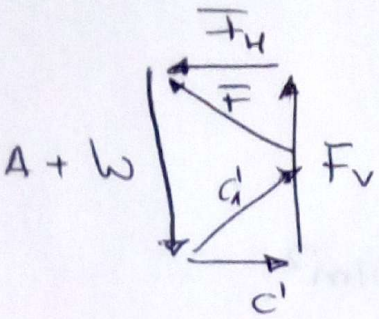


$A + W = C_1' \operatorname{sen} 45 + F_V$.

$F_V = (W + A) - \operatorname{sen} 45 \cdot C_1'$

$F_V = 330{,}7 + 205x$

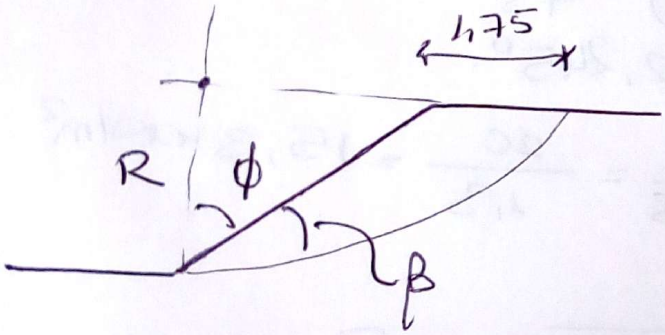
$$\vec{F} = \sqrt{(330{,}7 + 205x)^2 + 153{,}8^2}$$

$F_H = C_1' \cos 45 = 153{,}8$.

$$\left[\sqrt{(330{,}7 + 205x)^2 + 153{,}8^2}\right] \cdot 10 \cdot \operatorname{sen} 22{,}245^\circ + 153{,}8\sqrt{2} \cdot 11{,}1 =$$

$$= 3{,}8\sqrt{(330{,}7 + 205x)^2 + 153{,}8^2} - 11{,}58 = 1625x - 60x^2.$$

$x = 1{,}75\,m$.



$$\phi = \operatorname{arctg} \frac{Rx}{R2} = 39{,}5^\circ$$

$$\boxed{\beta = 90^\circ - \phi = 50{,}5^\circ}$$

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