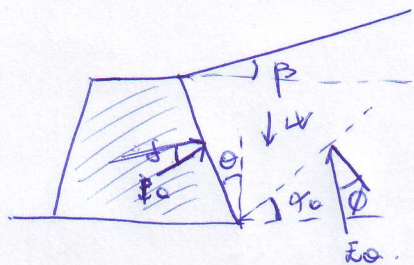


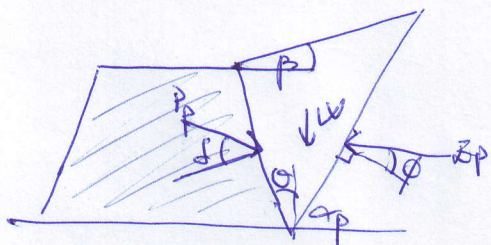
IMPULSES DE TIERRA.

- CASO GENERAL. (Estático)



$$E_a = \frac{1}{2} k_a \gamma H^2$$

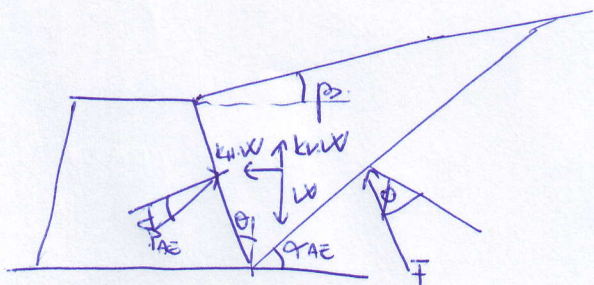
$$k_a = \frac{\cos^2(\phi - \theta)}{\cos^2\theta \cos(\delta + \theta) \left[1 + \sqrt{\frac{\sin(\delta + \phi) \sin(\phi - \theta)}{\cos(\delta + \theta) \cos(\phi - \theta)}} \right]^2}$$



$$k_p = \frac{\cos^2(\phi + \theta)}{\cos^2\theta \cos(\delta - \theta) \left[1 - \sqrt{\frac{\sin(\delta + \phi) \sin(\phi + \theta)}{\cos(\delta - \theta) \cos(\phi - \theta)}} \right]^2}$$

- MONONOBRE - OKABE (Estatico + sísmico).

$$Q_H = k_H \cdot P \quad Q_V = k_V \cdot P$$



$$P_{AE} = \frac{1}{2} k_{AE} \gamma H^2 (1 - k_v)$$

$$k_{AO} = \frac{\cos^2(\phi - \theta - \psi)}{\cos(\psi) \cos^2\theta \cdot \cos(\delta + \theta + \psi) \cdot \left[1 + \sqrt{\frac{\sin(\delta + \phi) \sin(\phi - \theta - \psi)}{\cos(\delta + \theta + \psi) \cos(\phi - \theta)}} \right]^2}$$

OTO: !!

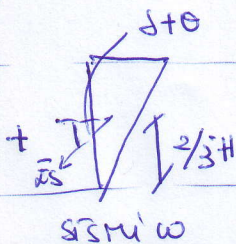
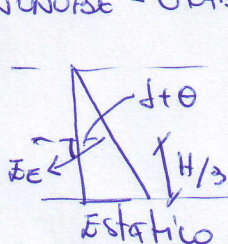
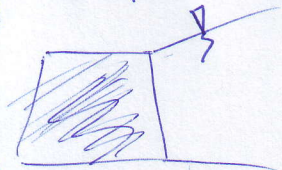
• En Chile se usa.

$$k_v = 0 \quad k_H = 0,15 - 0,25$$

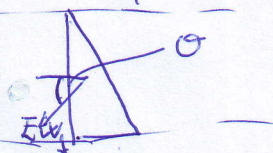
$$\psi = \arctg\left(\frac{k_H}{1 - k_v}\right)$$

• Si $k_H = k_V = 0 \Rightarrow k_{AO}$ DE MONONOBRE-OKABE $\Rightarrow$ SE TRANSFORMA EN k_a (estático)

• DIAGRAMA. MONONOBRE - OKABE.



(si hay AGUA)



• Muros lisos!

$$\delta = \phi/2 \text{ o } \delta = \phi/3$$

• Muros rugosos!

$$\delta = \phi$$