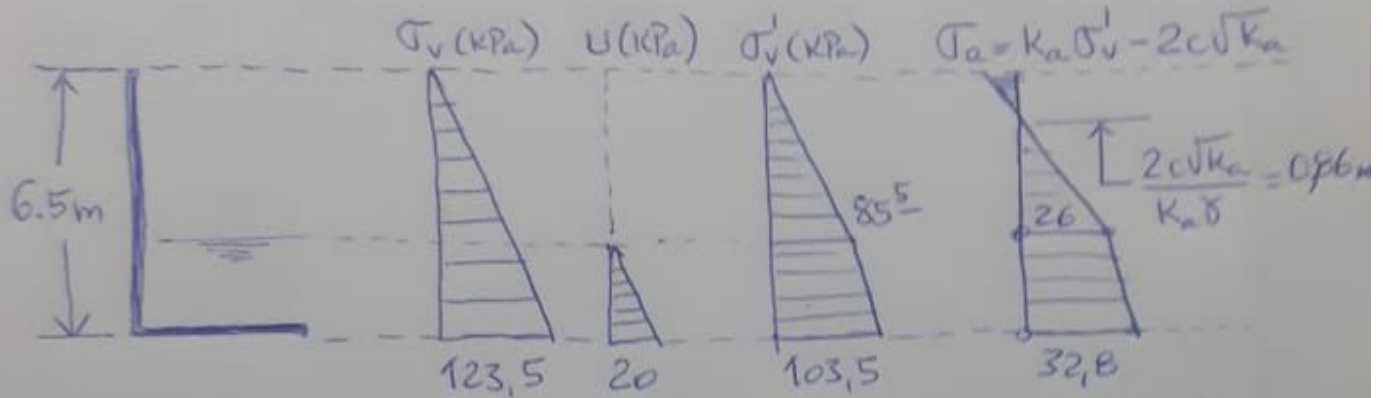
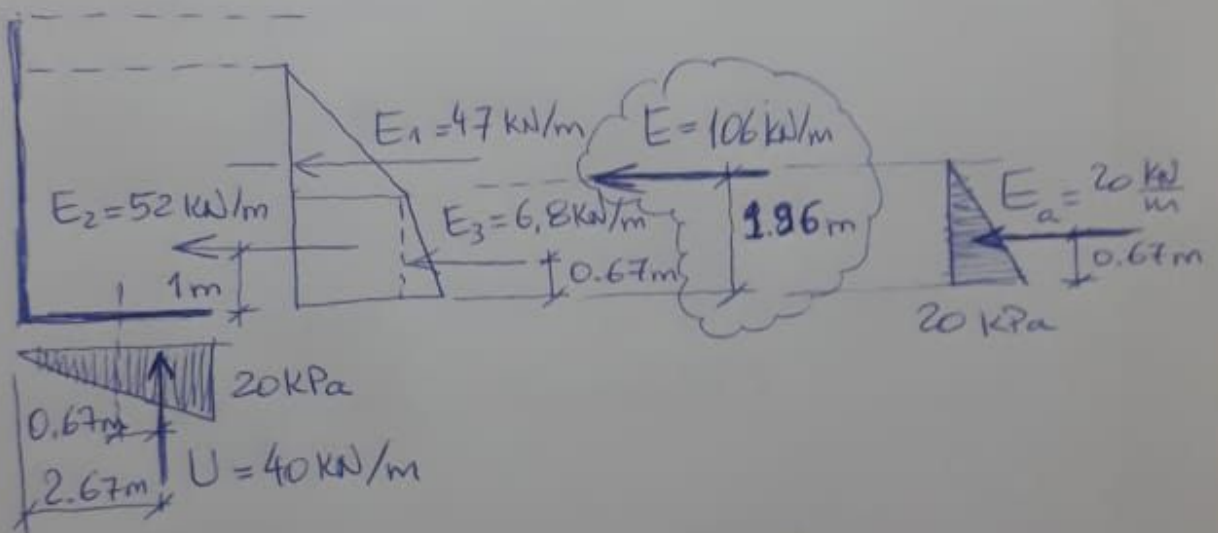


PEF 3405 - Exercício de muro de arrimo
GABARITO

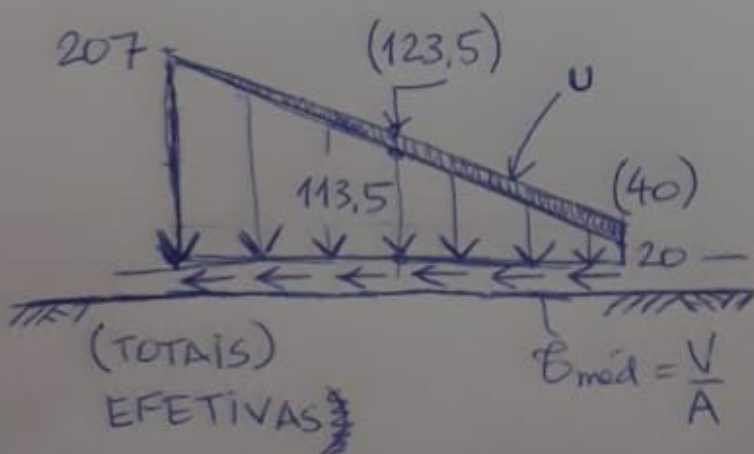
a) Utilizando Rankine: $K_a = (1 - \sin 27^\circ) / (1 + \sin 27^\circ) = 0,376$



Valores dos empuxos de terra (E) e água (E_a)



b) Tensões na base do muro (kPa)



OBS.:

$$N = 494 \text{ kN/m}$$

$$U = 40 \text{ kN/m}$$

$$M_E = 221 \text{ kNm/m}$$

$$M_U = 27 \text{ kNm/m}$$

$$c) F_{at} = \mu (N - U) = \operatorname{tg}\left(\frac{2 \times 33}{3}\right) \times (494 - 40)$$

$$F_{at} = 183 \text{ kN/m}$$

$$V = 126 \text{ kN/m}$$

$$FS = \frac{183}{126} = 1.46$$

$$d) M_E = N \times 2 = 494 \times 2 = 988 \text{ kN.m}$$

$$M_T = E \times 1.96 + E_a \times 0.67 + U \times 2.67 = 328 \text{ kN.m}$$

$$FS = \frac{988}{328} = 3.01$$

e) Verificar cap. carga ($FS = 2.0$ a 3.0) e estabilidade geral ($FS \geq 1.5$).