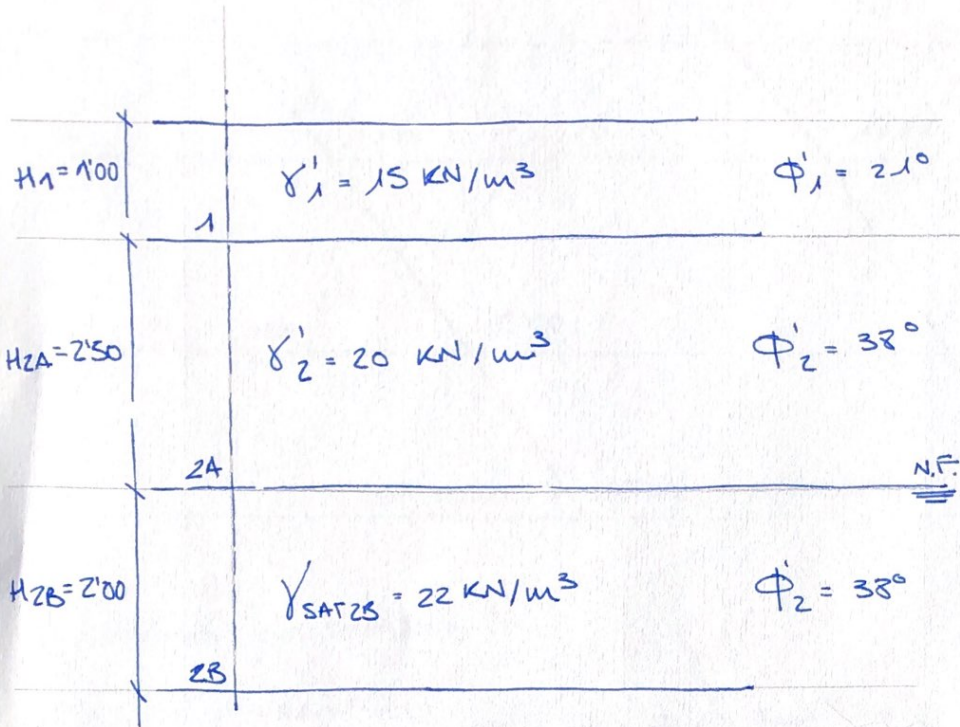


EXAMEN 1



① TENSIONES VERTICALES

$$\tau_{V1} = \gamma'_1 \cdot H_1 = 15 \text{ KN/m}^3 \cdot 1'00 \text{ m} = \underline{15 \text{ KN/m}^2}$$

$$\sigma'_{V1} = \tau_{V1} = \underline{15 \text{ KN/m}^2}$$

$$\tau_{V2A} = \gamma'_2 \cdot H_{2A} + \tau_{V1} = 15 \text{ KN/m}^2 + 20 \text{ KN/m}^3 \cdot 2'50 \text{ m}$$

$$\tau_{V2A} = 15 \text{ KN/m}^2 + 50 \text{ KN/m}^2 = \underline{65 \text{ KN/m}^2}$$

$$\sigma'_{V2A} = \tau_{V2A} = \underline{65 \text{ KN/m}^2}$$

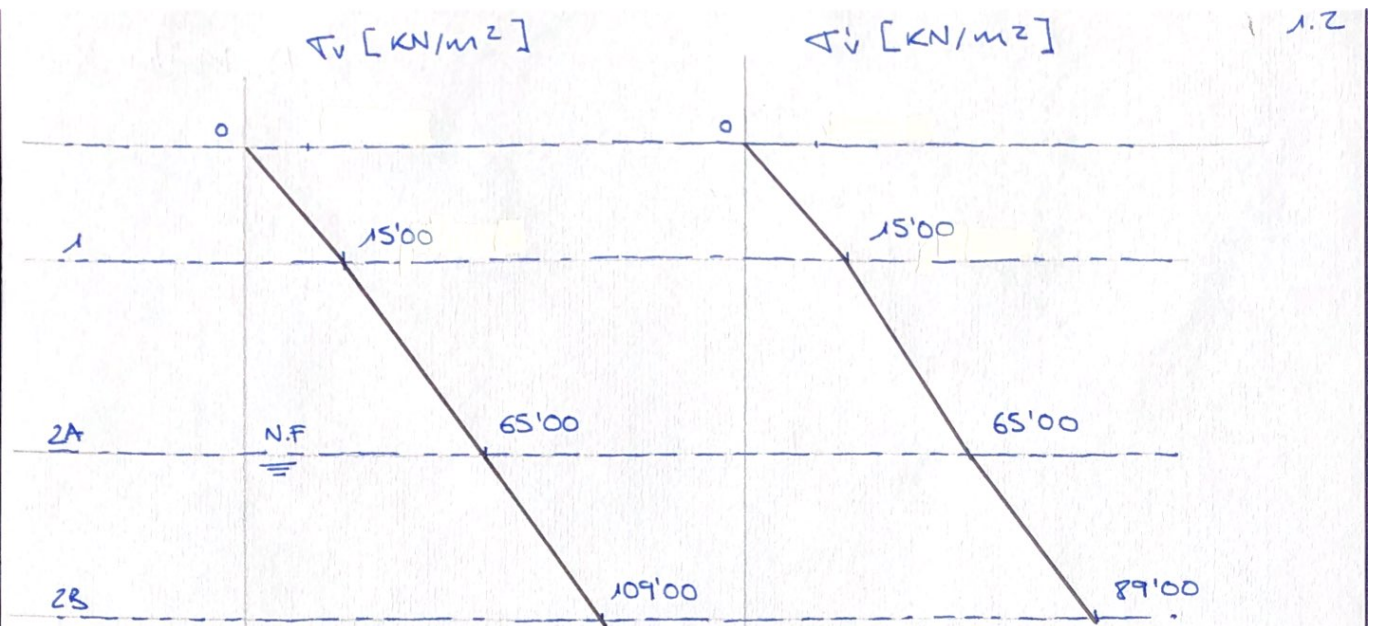
$$\sigma'_{V2B} = \tau_{V2A} + \gamma'_{SAT2B} \cdot H_{2B} = 65 \text{ KN/m}^2 + 22 \text{ KN/m}^3 \cdot 2'00 \text{ m}$$

$$\tau_{V2B} = 65 \text{ KN/m}^2 + 44 \text{ KN/m}^2 = \underline{109 \text{ KN/m}^2}$$

Cartagena99

CLASES PARTICULARES, TUTORÍAS TÉCNICAS ONLINE
LLAMA O ENVÍA WHATSAPP: 689 45 44 70

ONLINE PRIVATE LESSONS FOR SCIENCE STUDENTS
CALL OR WHATSAPP: 689 45 44 70



② CÁLCULO DE EMPUJES

$$K_{A1} = \frac{1 - \operatorname{sen} \phi'_1}{1 + \operatorname{sen} \phi'_1}$$

$$\operatorname{sen} \phi'_1 = \operatorname{sen} 21^\circ = 0'358$$

$$K_{A1} = \frac{1 - 0'358}{1 + 0'358} = \underline{\underline{0'472}}$$

$$K_{A2} = \frac{1 - \operatorname{sen} \phi'_2}{1 + \operatorname{sen} \phi'_2}$$

$$\operatorname{sen} \phi'_2 = \operatorname{sen} 38^\circ = 0'616$$

$$K_{A2} = \frac{1 - 0'616}{1 + 0'616} = \underline{\underline{0'238}}$$

$$e_{o1} = \tau'_{v1} \cdot K_{A1} = 15 \text{ KN/m}^2 \cdot 0'472 = \underline{\underline{7'08 \text{ KN/m}^2}}$$

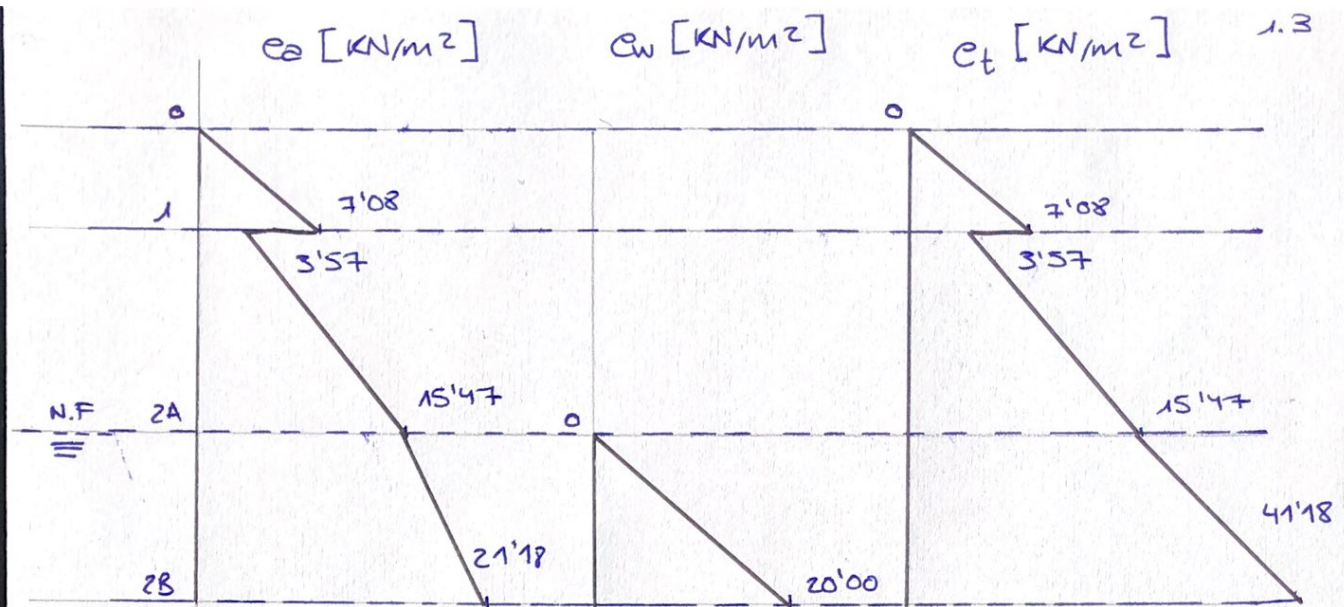
$$e_{o1'} = \tau'_{v1} \cdot K_{A2} = 15 \text{ KN/m}^2 \cdot 0'238 = \underline{\underline{3'57 \text{ KN/m}^2}}$$

$$e_{o2A} = \tau'_{v2A} \cdot K_{A2} = 65 \text{ KN/m}^2 \cdot 0'238 = \underline{\underline{15'47 \text{ KN/m}^2}}$$

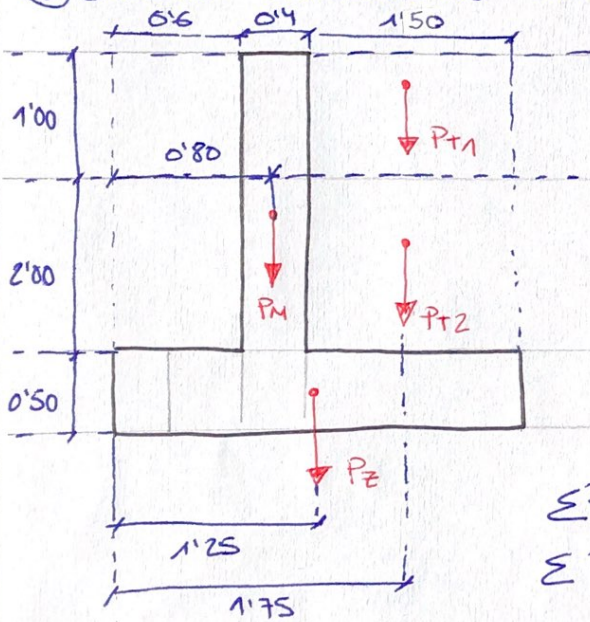
Cartagena99

CLASES PARTICULARES, TUTORÍAS TÉCNICAS ONLINE
LLAMA O ENVÍA WHATSAPP: 689 45 44 70

ONLINE PRIVATE LESSONS FOR SCIENCE STUDENTS
CALL OR WHATSAPP: 689 45 44 70



③ CÁLCULO ESTABILIDAD MUROS



$$P_T = P_{T1} + P_{T2}$$

$$P_T = (1'50 \cdot 1'00) 15 + (1'50 \times 2'00) 20$$

$$P_T = 22'50 + 60 = \underline{\underline{82'50 \text{ KN/m}}}$$

$$P_Z = 0'50 \times 2'50 \times 25 = \underline{\underline{31'50 \text{ KN/m}}}$$

$$P_M = 0'40 \times 3'00 \times 25 = \underline{\underline{30'00 \text{ KN/m}}}$$

$$\Sigma P_V = P_T + P_Z + P_M$$

$$\Sigma P_V = 82'50 + 31'50 + 30'00 = \underline{\underline{144'00 \text{ KN/m}}}$$

$$E_1 = 7'08 \cdot \frac{1}{2} \cdot 1 = \underline{\underline{3'54 \text{ KN/m}}}$$

$$E_{2AR} = 3'57 \cdot 2'50 = \underline{\underline{8'93 \text{ KN/m}}}$$

$$E_{2AB} = (15'47 - 3'57) \cdot 2'50 / 2 = \underline{\underline{14'88 \text{ KN/m}}}$$

Cartagena99

CLASES PARTICULARES, TUTORÍAS TÉCNICAS ONLINE
LLAMA O ENVÍA WHATSAPP: 689 45 44 70

ONLINE PRIVATE LESSONS FOR SCIENCE STUDENTS
CALL OR WHATSAPP: 689 45 44 70

$$F_D = \frac{\sum F_V \cdot t_s \int'}{\sum F_{FH}} = \frac{174 \cdot 0'473}{27'35} = \underline{\underline{2'149}}$$

$F_D = 2'149 \geq 1'50 \Rightarrow$ CUMPLE SEGURIDAD DESLIZAMIENTO

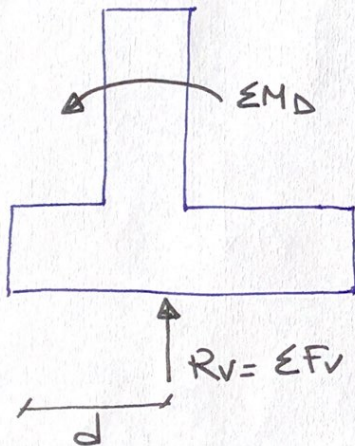
CÁLCULO DE VUELCO

$$\begin{aligned} \sum M_D &= 14'88 \cdot 0'83 + 8'93 \cdot 1'25 + 3'54 \cdot 2'83 = \\ &= 12'35 + 11'16 + 10'02 = \underline{\underline{33'53 \text{ KN}\cdot\text{m}/\text{m}}} \end{aligned}$$

$$\begin{aligned} \sum M_E &= 30 \cdot 0'8 + 31'50 \cdot 1'25 + 82'50 \cdot 1'75 \\ &= 24 + 39'38 + 144'38 = \underline{\underline{207'76 \text{ KN}\cdot\text{m}/\text{m}}} \end{aligned}$$

$$F_V = \frac{\sum M_E}{\sum M_D} = \frac{207'76}{33'53}$$

$$F_V = \underline{\underline{6'20}} \geq 1'50 \Rightarrow \text{NO HAY VUELCO}$$



$$R_V \cdot d + M_D = M_E$$

$$d = \frac{M_E - M_D}{R_V} = \frac{207'76 - 33'53}{174}$$

$$d = \frac{174'23}{174} = \underline{\underline{1'209 \text{ m}}}$$

$$d = 1'209 \text{ m} \rightarrow e = \underline{\underline{0'041 \text{ m}}}$$

TENSIONES DEL TERRENO

$$\tau_{\text{MAX}} = \frac{2R_V}{B}$$

$$\sigma = \frac{\sum F_V}{B} \left(1 + \frac{6 \cdot 0'041}{B} \right) = \frac{174}{B} \left(1 + \frac{6 \cdot 0'041}{B} \right)$$

Cartagena99

CLASES PARTICULARES, TUTORÍAS TÉCNICAS ONLINE
LLAMA O ENVÍA WHATSAPP: 689 45 44 70

ONLINE PRIVATE LESSONS FOR SCIENCE STUDENTS
CALL OR WHATSAPP: 689 45 44 70