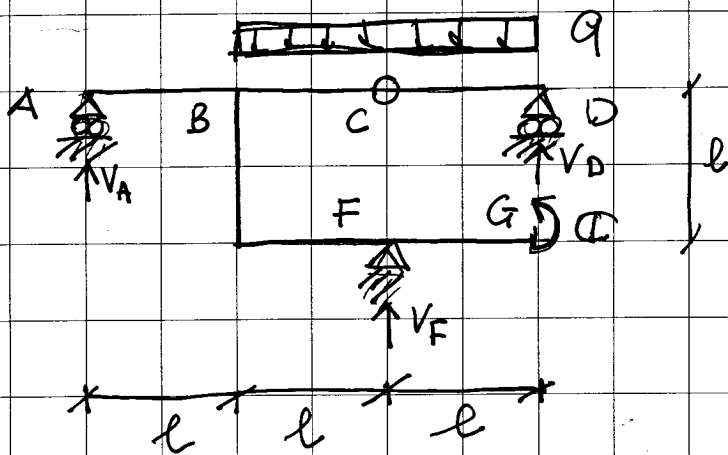


B1) 1.14.02



$$q = 2000 \text{ kg/m}$$

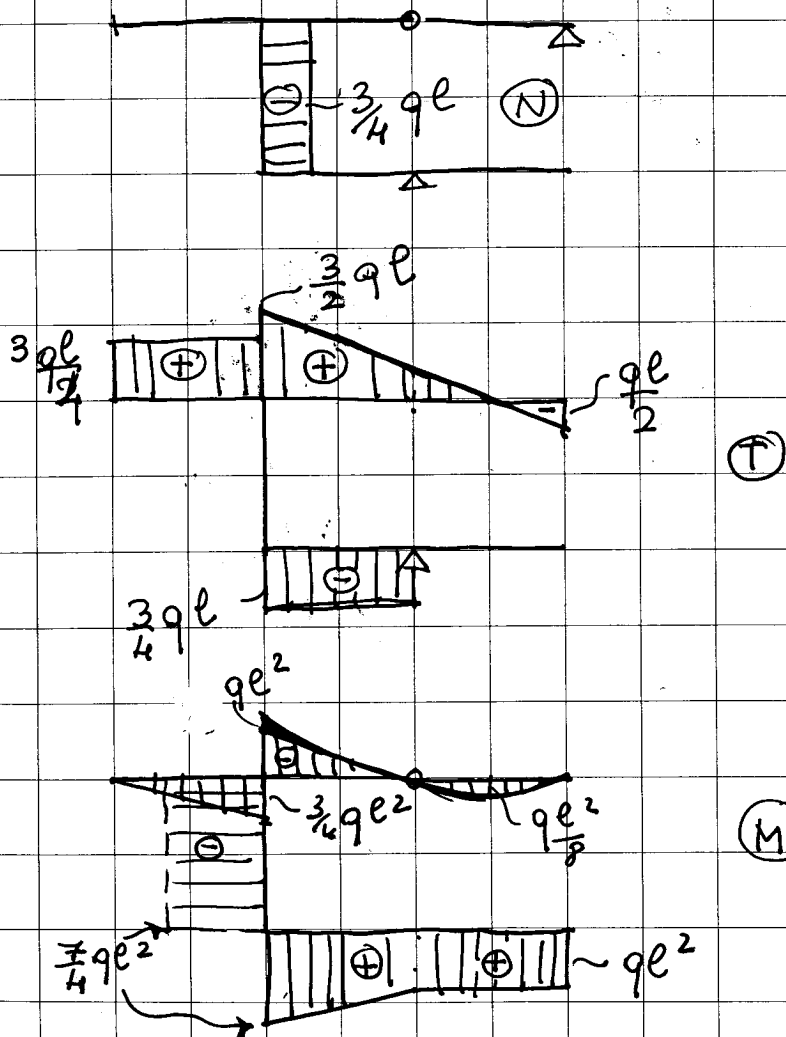
$$l = 1 \text{ m}$$

$$\begin{cases} V_D l - \frac{q l^2}{2} = 0 \\ V_A 2l - \frac{q l^2}{2} - \frac{C}{l} = \frac{3}{2} q l^2 \\ V_A + V_D + V_F = 2 q l \end{cases}$$

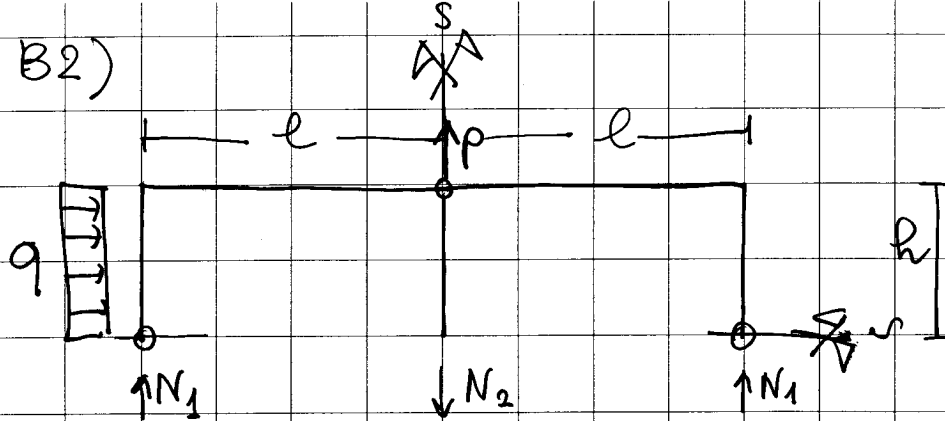
$$V_A = \frac{3}{4} q l$$

$$V_F = \frac{3}{4} q l$$

$$V_D = \frac{q l}{2}$$



B2)

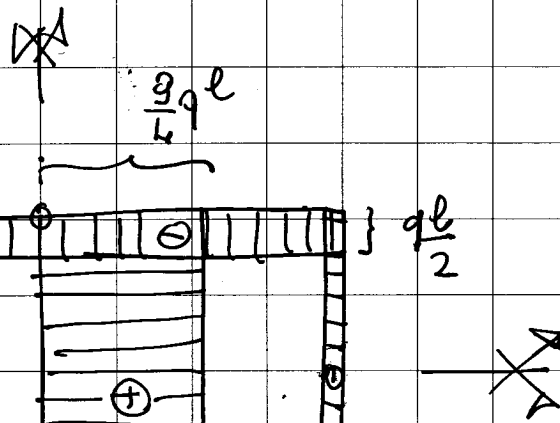


$$h = \frac{l}{2}$$

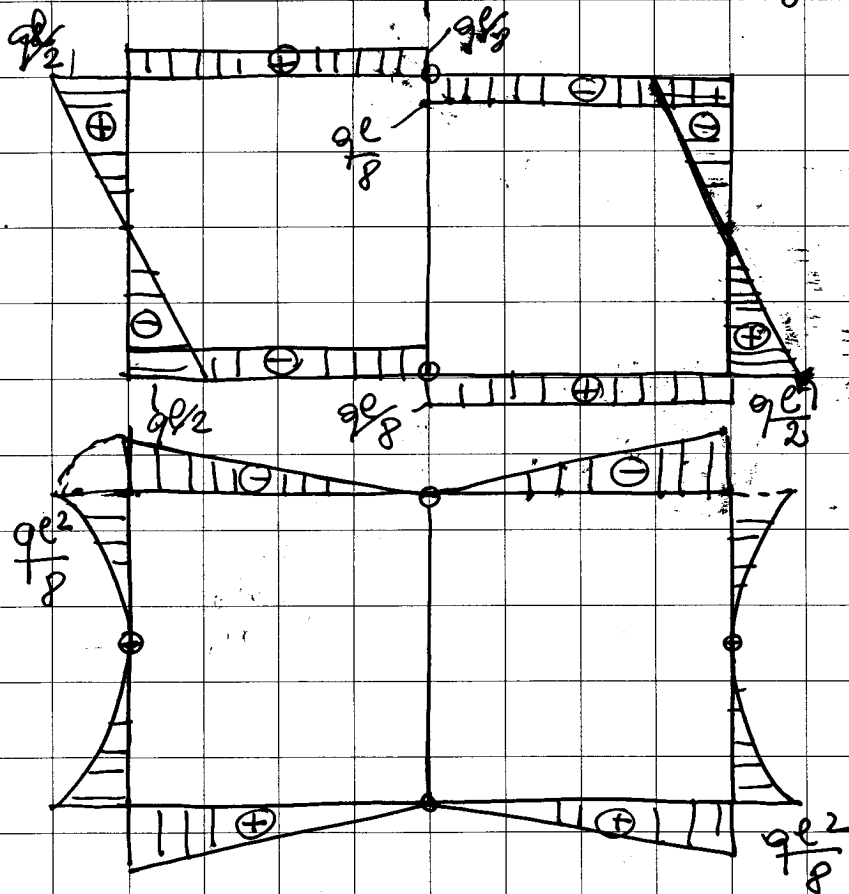
$$\begin{cases} -N_1 l + \frac{q l^2}{8} = 0 \\ 2N_1 + P - N_2 = 0 \end{cases}$$

$$N_1 = \frac{q l}{8} = 225 \text{ kg}$$

$$N_2 = \frac{3}{4} q l = 4050 \text{ kg}$$



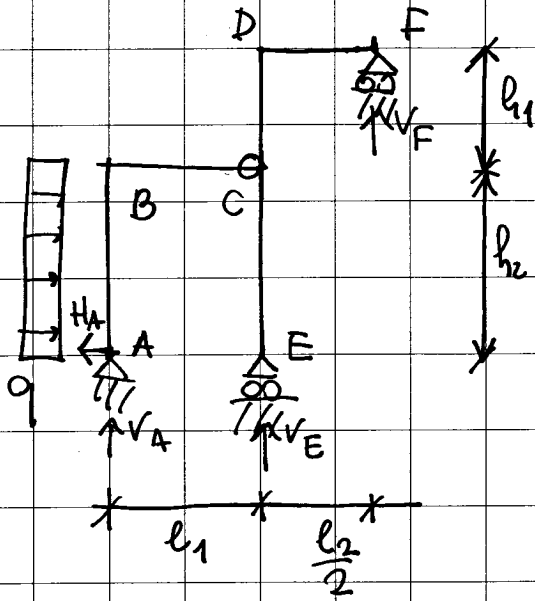
(N)



(T)

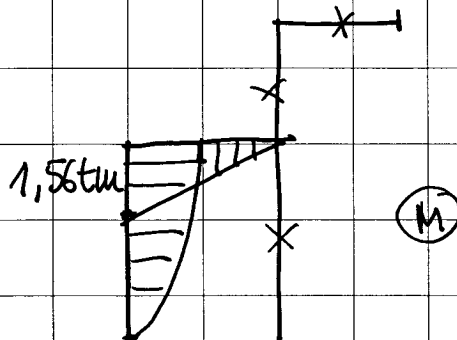
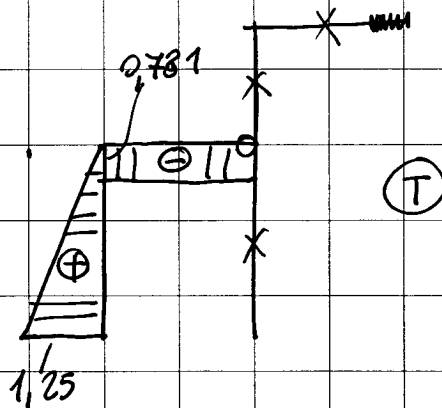
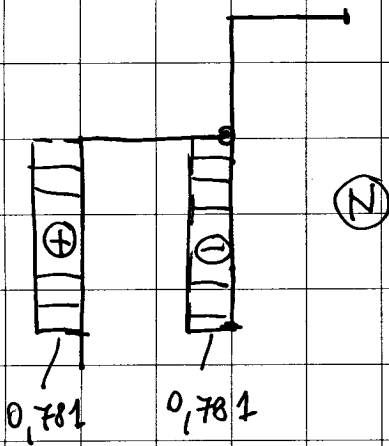
(M)

B3)

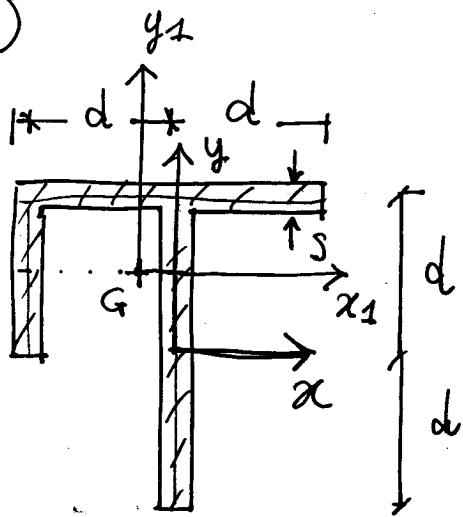


$$\begin{cases} V_A + V_E + V_F = 0 \\ H_A = q l_1 \\ V_A l_1 + H_A l_1 - \frac{q l_1^2}{2} = 0 \\ V_E l_1 + V_F (l_1 + \frac{l_2}{2}) - \frac{q l_1^2}{2} = 0 \end{cases}$$

$$\begin{cases} V_A = -\frac{q l_1^2}{2 l_1} = -0,781 \text{ t} \\ V_E = \frac{q l_1^2}{2 l_1} = 0,781 \text{ t} \\ V_F = 0 \\ H_A = q l_1 = 1,25 \text{ t} \end{cases}$$



B4)



$$s \ll d$$

$$d = 20 \text{ cm}$$

$$s = 2 \text{ cm}$$

$$x_G = \frac{\sum A_i x_{Gi}}{\sum A_i} = \frac{ds \cdot -d}{5sd} = -\frac{d}{5}$$

$$y_G = \frac{\sum A_i y_{Gi}}{\sum A_i} = \frac{2ds \cdot d + ds \cdot \frac{d}{2}}{5sd} = \frac{d}{2}$$

$$G \equiv \left(-\frac{d}{5}, \frac{d}{2}\right)$$

$$I_{x_1} = \frac{s(2d)^3}{12} + 2sd \cdot \frac{d^2}{4} + 2sd \cdot \frac{d^2}{4} + \frac{sd^3}{12} + \cancel{2d \frac{s^3}{12}} = \frac{21}{12} sd^3 = 28'000 \text{ cm}^4$$

$$I_{y_1} = 2sd \cdot \frac{d^2}{25} + 2sd \frac{d^2}{25} + \frac{s(2d)^3}{12} + \cancel{\frac{d s^3}{12}} + \frac{16d^2 \cdot sd}{25} =$$

$$= sd^3 \left[\frac{4}{25} + \frac{2}{3} + \frac{16}{25} \right] = \frac{sd^3}{25 \cdot 3} (12 + 50 + 48) =$$

$$= \frac{110}{75} sd^3 = \frac{22}{15} sd^3 = 23'466 \text{ cm}^4$$

$$I_{x_1 y_1} = sd \cdot \left(-\frac{4}{5}d\right) \cdot 0 + 2sd \cdot \frac{d}{5} \cdot \frac{d}{2} + 2sd \cdot \left(-\frac{d}{2}\right) \cdot \left(\frac{d}{5}\right) = 0$$

(G, x_1, y_1) è baricentrico d'inerzie

$$\alpha = \frac{1}{2} \arctan \frac{-2I_{x_1 y_1}}{I_{x_1} - I_{y_1}} = 0^\circ$$

$$C \equiv (25'733, 0)$$

$$R = 2267 \text{ cm}$$

