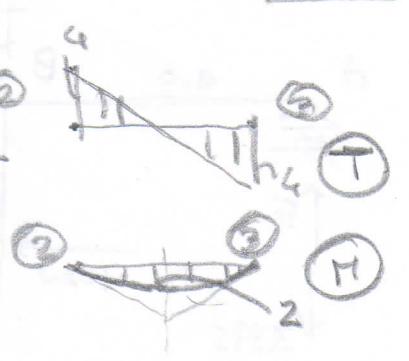
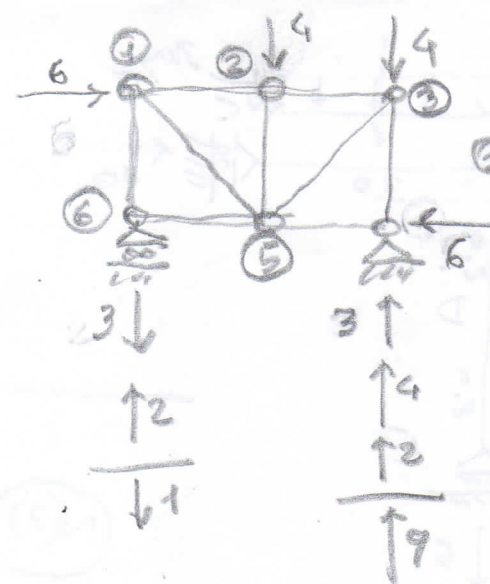
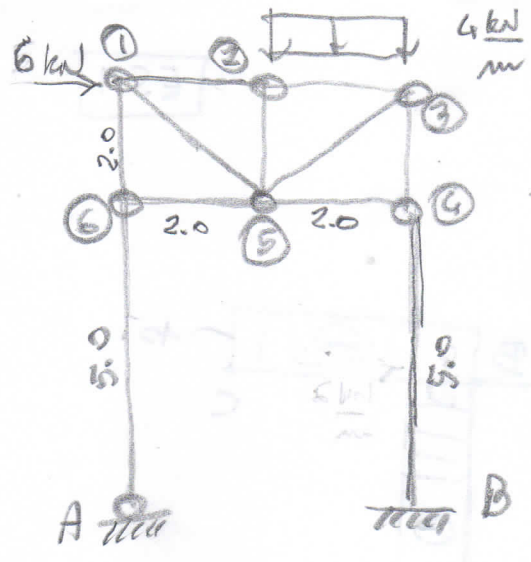
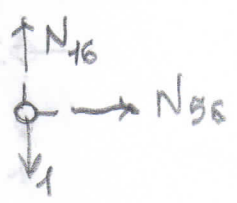


BC)  $M(z) = -3 \frac{(3-z)^2}{2} = -\frac{3}{2} (9 + z^2 - 6z) = -\frac{3}{2} z^2 + 9z - 13.5$



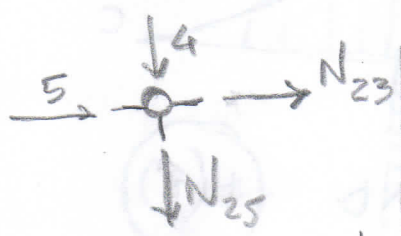
Nodo ⑥



$$N_{36} = 0$$

$$N_{16} = 1$$

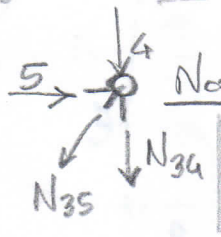
Nodo ②



$$N_{23} = -5$$

$$N_{25} = -4$$

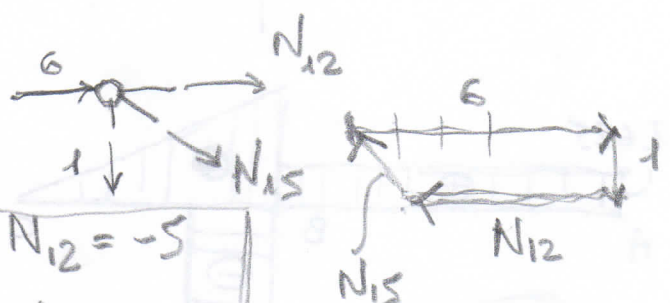
Nodo ③



$$N_{35} = 5\sqrt{2}$$

$$N_{34} = -9$$

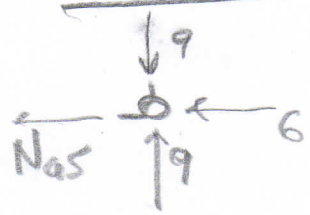
Nodo ①



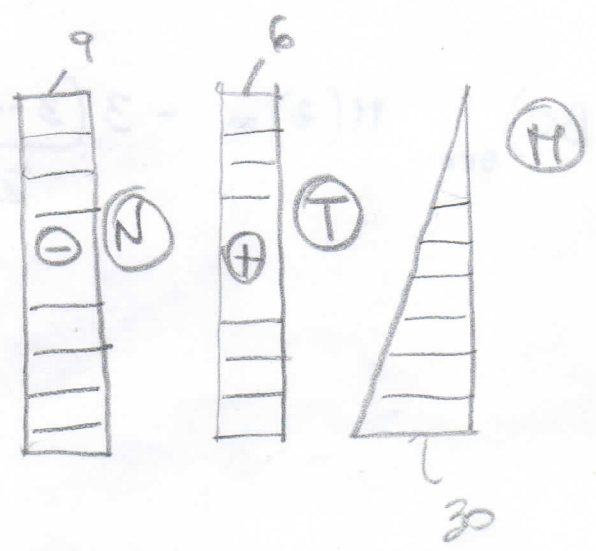
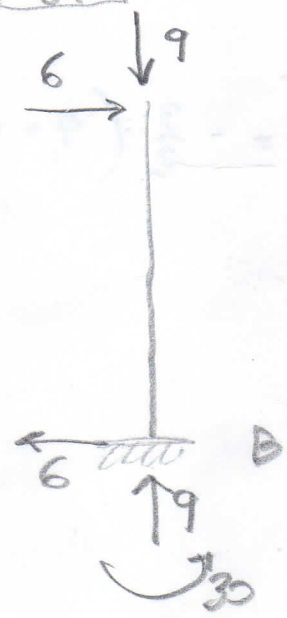
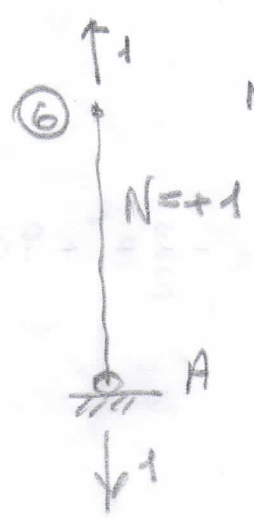
$$N_{12} = -5$$

$$N_{15} = -\sqrt{2} = -1.414$$

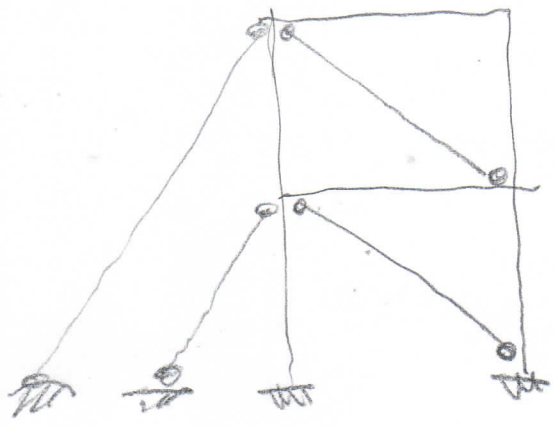
Nodo ④



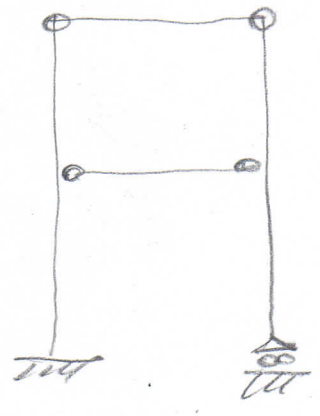
$$N_{45} = -6$$



ES. 3

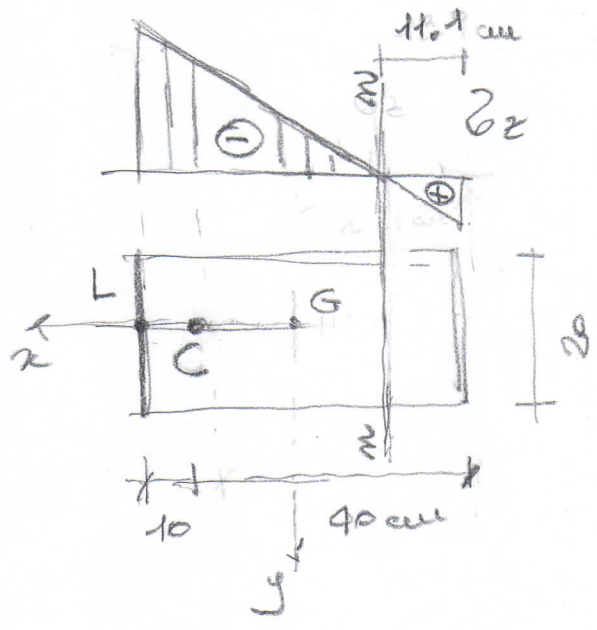


10 ip.



15.

ES. 4



$$N_c = -40 \text{ kN}$$

$$A = 50 \times 20 = 1000 \text{ cm}^2$$

$$I_z = \frac{50 \times 20^3}{12} = 33333 \text{ cm}^4$$

$$I_y = \frac{20 \times 50^3}{12} = 208333 \text{ cm}^4$$

$$N_G = -40 \text{ kN}$$

$$M = M_y = 40 \times 0.15 = 6 \text{ kNm}$$

$$\sigma_z = -\frac{40 \times 10^3}{1000 \times 10^2} - \frac{6 \times 10^6}{208333 \times 10^4} x = -0.4 - 0.00288 x \quad \left[ \frac{\text{N}}{\text{mm}^2} \right]$$

$$\text{M-N}) \quad x = -\frac{0.4}{0.00288} = -139 \text{ mm} \quad \text{opp. } d_{G-m} = \frac{208333}{1000} \frac{1}{15} = 13.9$$

$$\sigma_z^{\text{max}} = -0.4 - 0.00288 \times (+25) = +0.32$$

$$\sigma_z^{\text{min}} = -0.4 - 0.00288 \times (-25) = -1.12 \frac{\text{N}}{\text{mm}^2}$$

Le N<sub>0N</sub> resist. a traction  $d_{m-L} = 30 \text{ cm}$   $\sigma_z^{\text{max}} = -\frac{40000}{200 \times 30} \cdot 2 = -1.33 \frac{\text{N}}{\text{mm}^2}$