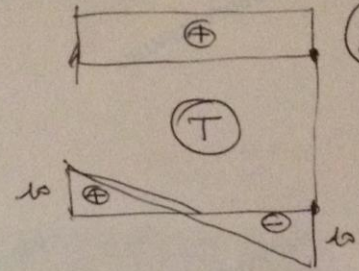
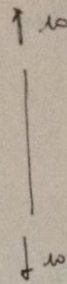
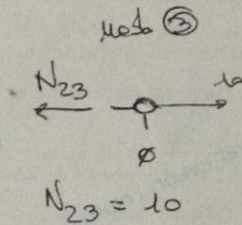
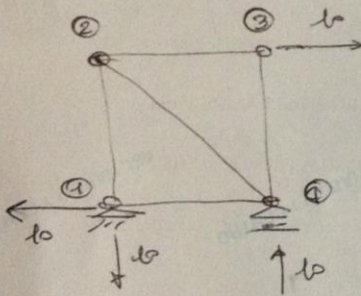
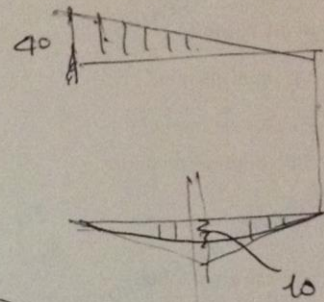


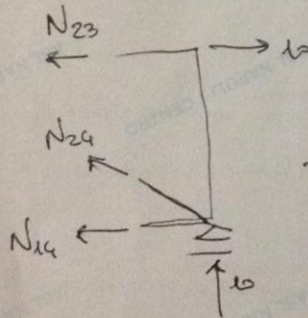
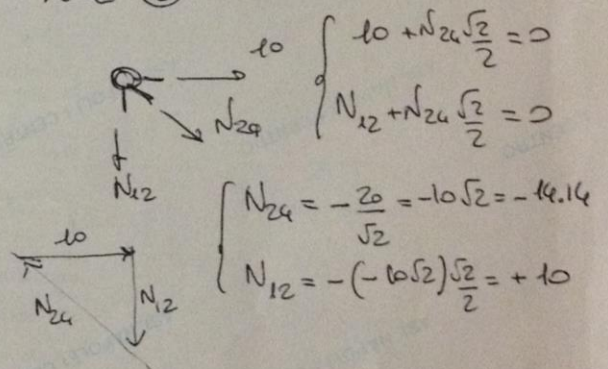
$$H(z)_D = 10z - 5 \frac{z^2}{2}$$



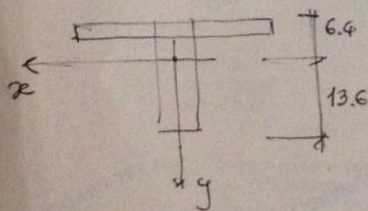
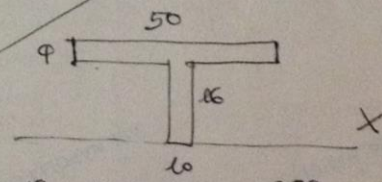
Sol 1



Node 2



$$-N_{14} \cdot 2.5 + 10 \cdot 2.5 = 0 \Rightarrow N_{14} = 10$$

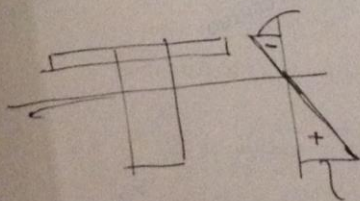


$$X_G = \frac{50 \times 4 \times 18 + 16 \times 10 \times 8}{50 \times 4 + 16 \times 10} = \frac{4880}{360} = 13.6 \text{ cm}$$

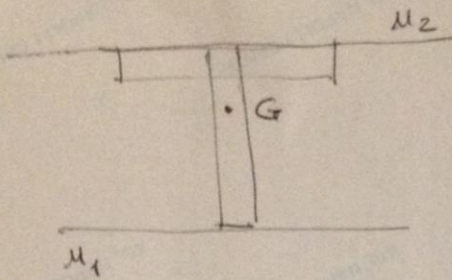
$$I_x = \frac{50 \times 4^3}{12} + 50 \times 4 \times 4.4^2 + \frac{10 \times 16^3}{12} + 10 \times 16 \times (13.6 - 8)^2 = 4138.67 + 8430.93 = 12569.60 \text{ cm}^4$$

$$\sigma_z^{\max} = \frac{230 \times 10^6}{12569.6 \times 10^4} \times 13.6 \times 10 = \frac{N}{\text{mm}^2} = 249 \frac{N}{\text{mm}^2}$$

$$\sigma_z^{\min} = \frac{230 \times 10^6}{12569.6 \times 10^4} \times 64 = -117 \frac{N}{\text{mm}^2}$$



Sol 2

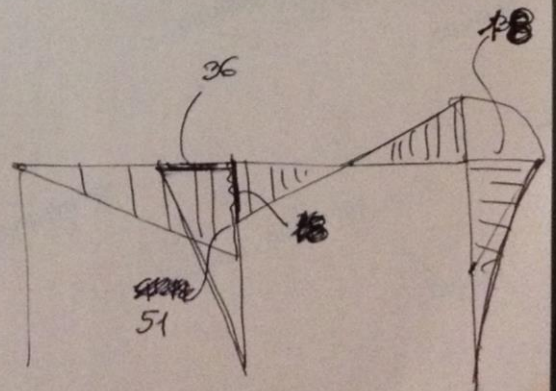
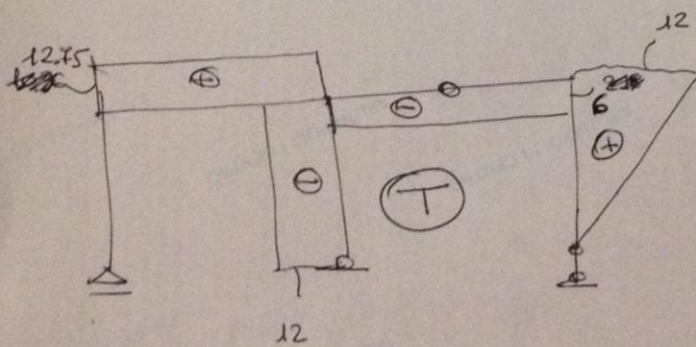
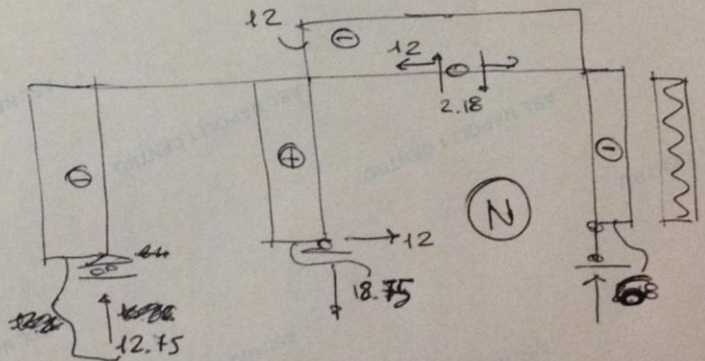
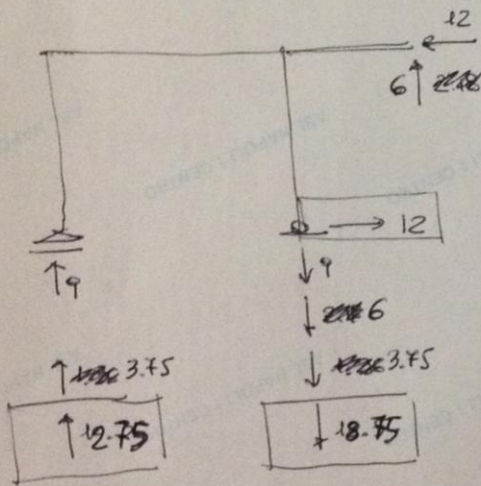
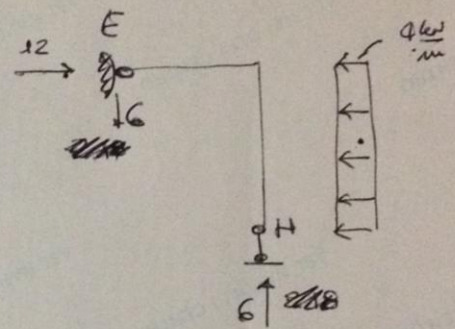
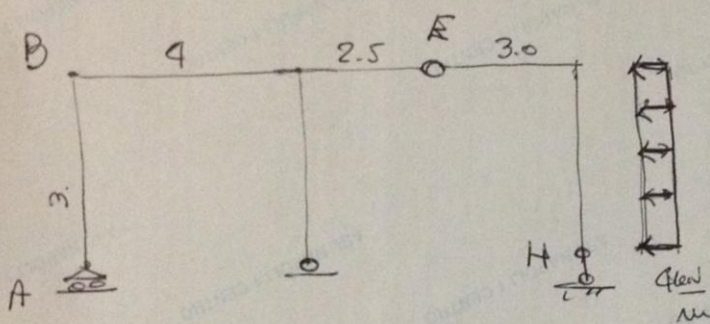


$$GM_1 \cdot C_1G = \int m_1 x^2$$

$$136 \times C_1G = \frac{12569.6 \times 10^4}{360 \times 10^2} \Rightarrow C_1G = 26 \text{ mm}$$

$$GM_2 \cdot C_2G = \int m_2 y^2$$

$$64 \times C_2G = \frac{12569.6 \times 10^4}{360 \times 10^2} \Rightarrow C_2G = 55 \text{ mm}$$



51 (T) 15 OK
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