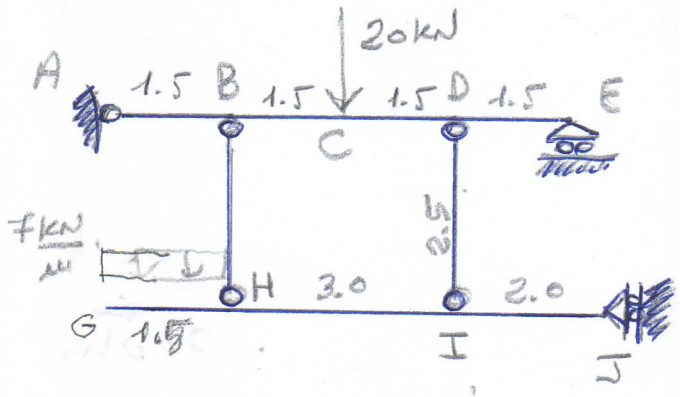
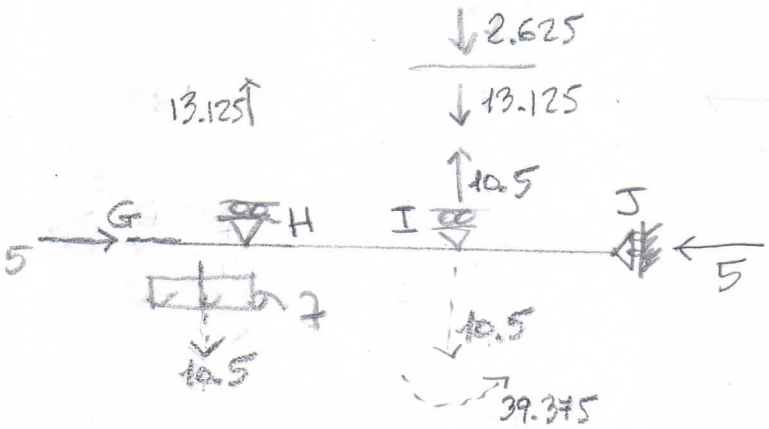
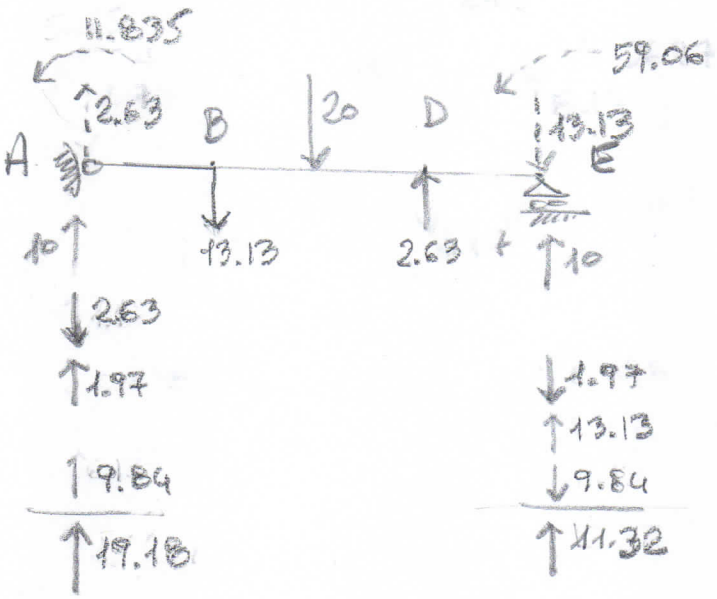


ES. 1

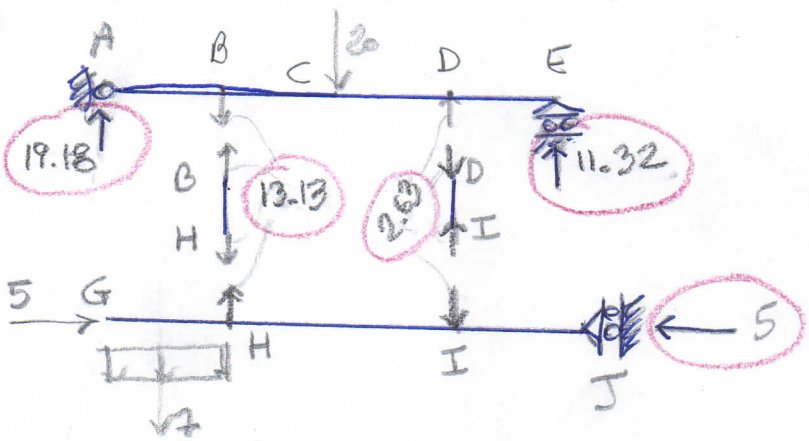


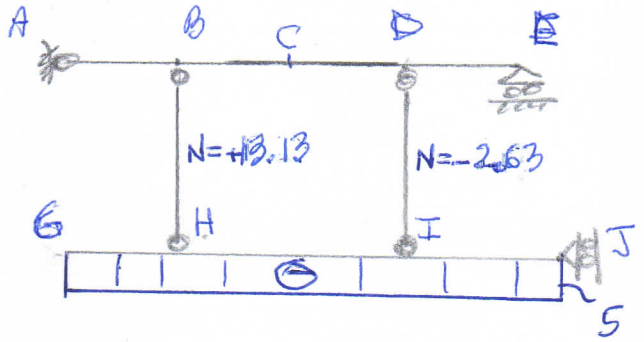
$R_J = 5$

$R_H = 13.13 \uparrow$ $R_I = 2.63 \downarrow$

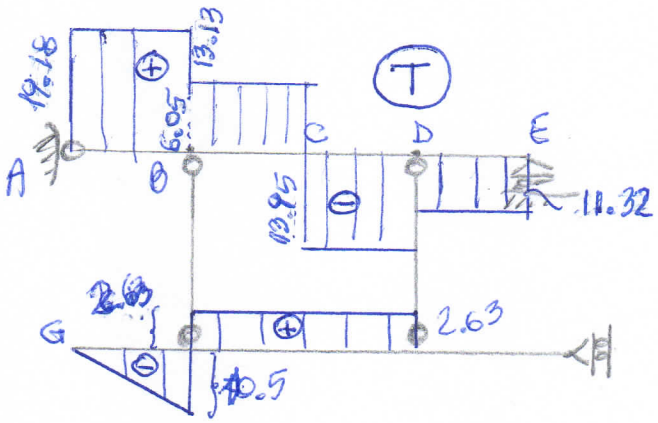


$R_A = 19.18 \uparrow$ $R_E = 11.32 \uparrow$

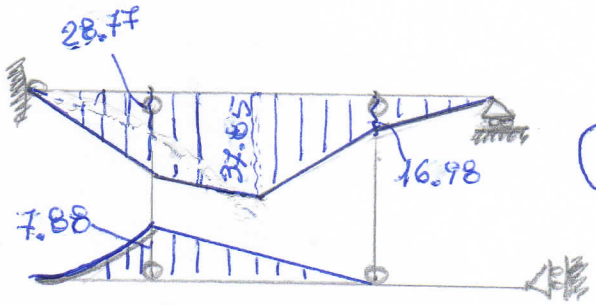




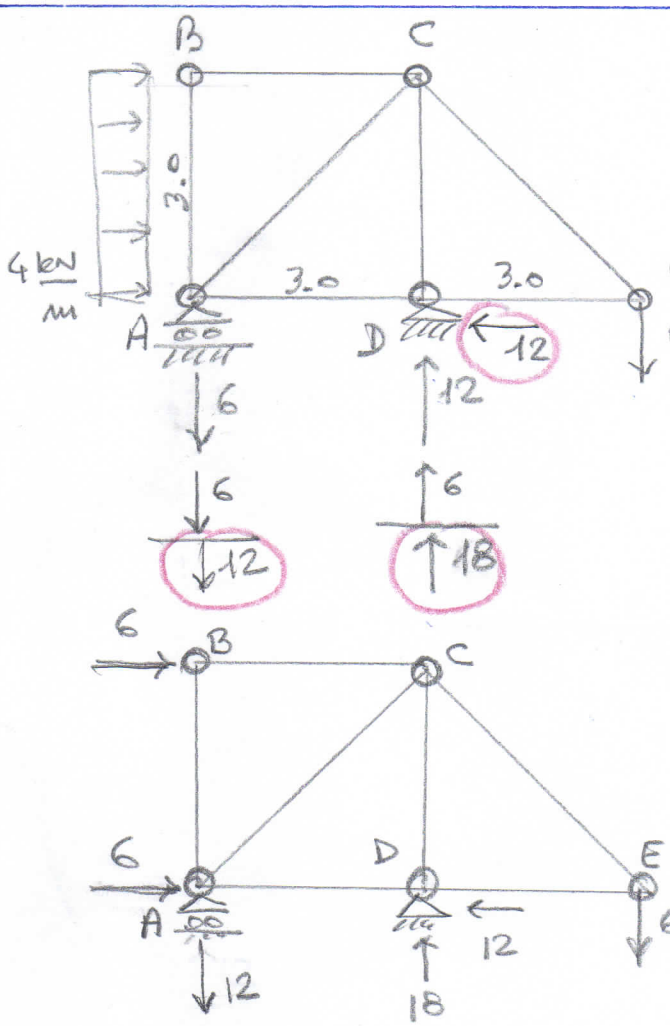
N



T



M

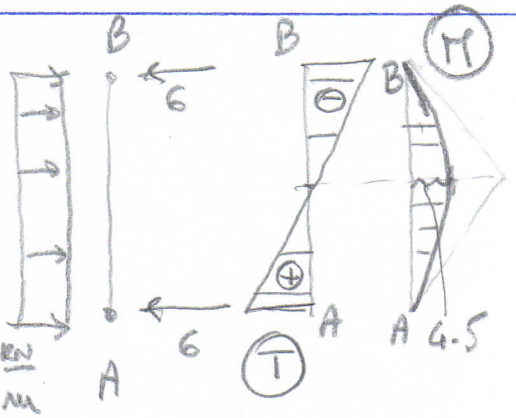


$R_A = 12 \downarrow$

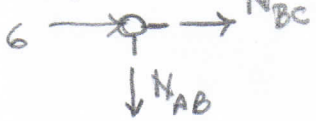
$R_{Dx} = \leftarrow 12$

$R_{Dy} = \uparrow 18$

ES.2



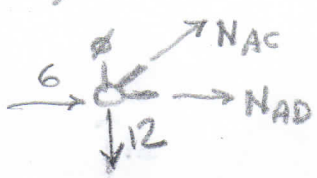
1°) Nodo B



$N_{AB} = 0$

$N_{BC} = -6$

2°) Nodo A



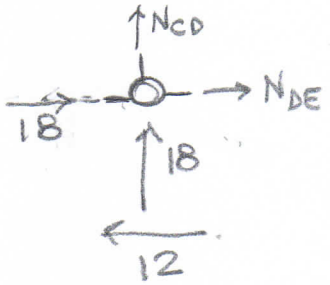
$6 + N_{AC}\frac{\sqrt{2}}{2} + N_{AD} = 0$

$-12 + N_{AC}\frac{\sqrt{2}}{2} = 0$

$N_{AC} = +\frac{24}{\sqrt{2}} = +12\sqrt{2} = +16.97$

$N_{AD} = -6 - 12\sqrt{2}\frac{\sqrt{2}}{2} = -18$

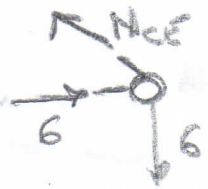
3°) Nodo D



$+18-12+N_{DE}=0 \Rightarrow N_{DE}=-6$

$N_{CD}+18=0 \Rightarrow N_{CD}=-18$

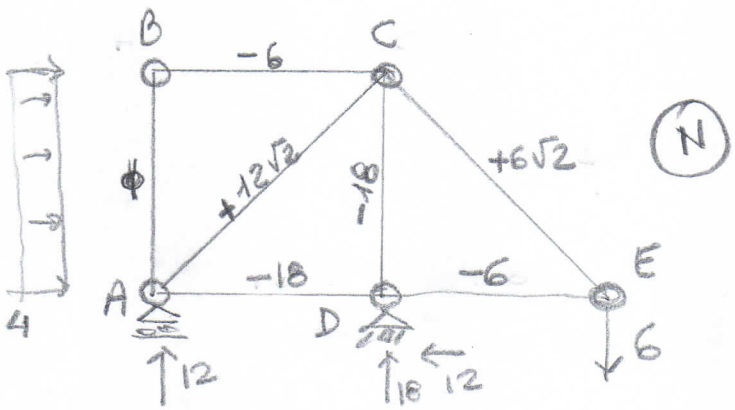
4°) Nodo E



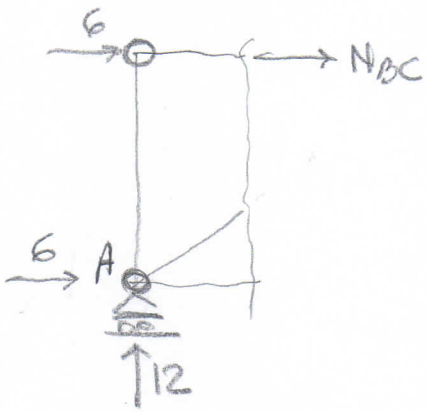
$+6-N_{CE}\frac{\sqrt{2}}{2}=0$

$\Downarrow$

$N_{CE}=+\frac{12}{\sqrt{2}}=6\sqrt{2}=8.49$



(N)



Sezione di Ritter

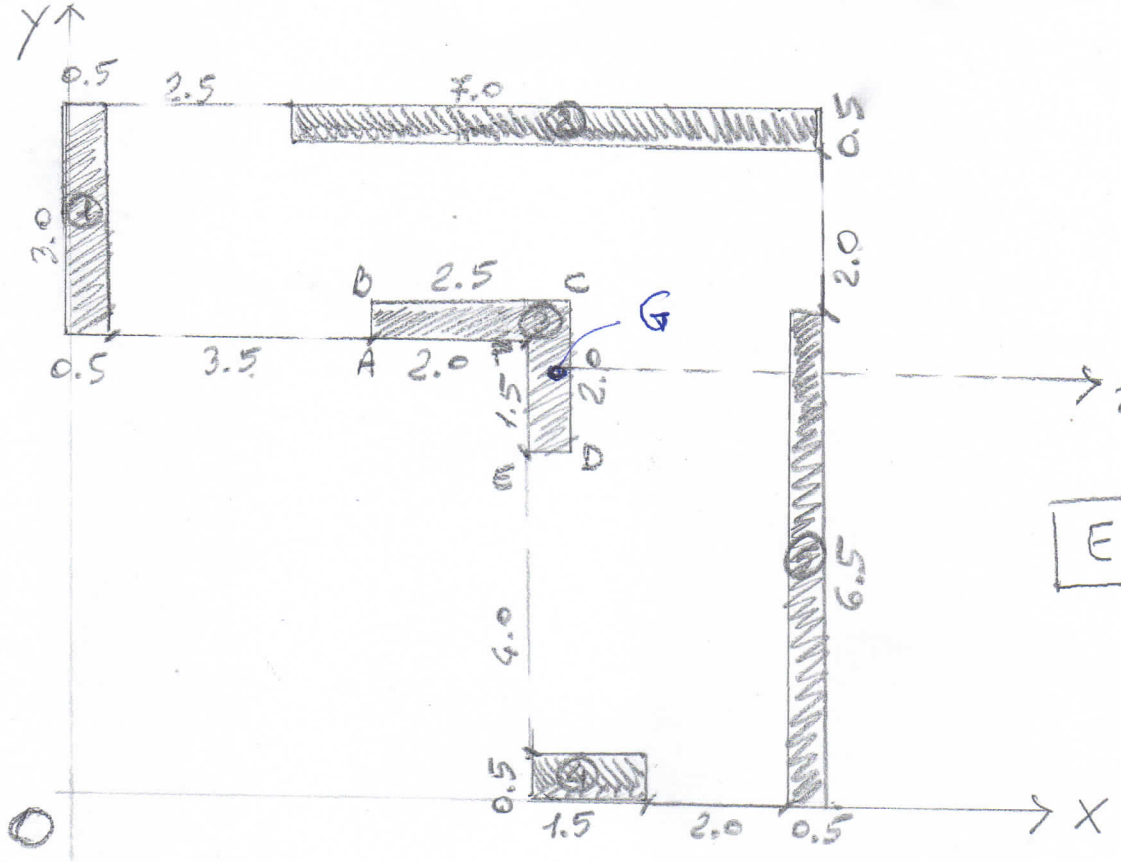
$-N_{BC}\times 3-6\times 3=0$

$\Downarrow$

$N_{BC}=-6$ ok

$$\Delta l_{BC}=\frac{N_{BC}\times l_{BC}}{E\,A}=-\frac{6000\,N\cdot 3000\,mm}{210000\,\frac{N}{mm^2}\cdot 700\,mm^2}=-0.12\,mm$$

p. 4



ES. 3

$$X_G = \frac{S_y}{A} \qquad A = 1.5 + 3.5 + 2 + 0.75 + 3.25 = 11\ m^2$$

$$2 = 1 + 1$$

$$Y_G = \frac{S_x}{A}$$

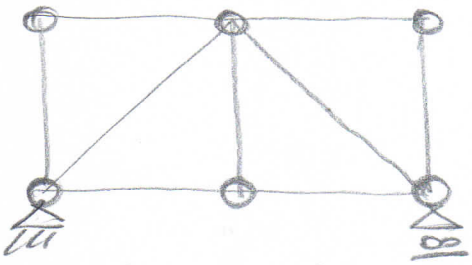
$$S_x = 1.5 \times 7.5 + 3.5 \times 8.75 + 1 \times 6.25 + 1 \times 5.5 + 0.75 \times 0.25 + 3.25 \times 3.25 =$$
$$= 64.375\ m^3$$

$$S_y = 1.5 \times 0.25 + 3.5 \times 6.5 + 1 \times 5 + 1 \times 6.25 + 0.75 \times 6.75 + 3.25 \times 9.75 =$$
$$= 71.125\ m^3$$

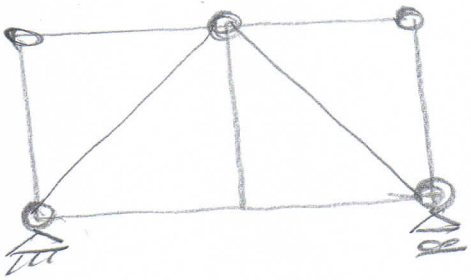
$$X_G = 6.47\ m \qquad Y_G = 5.85\ m$$

$$I_{x_G} = 2 \times \frac{0.5^3}{12} + 2 \times 0.5 \times (6.25 - 5.85)^2 +$$

$$+ 0.5 \times \frac{2^3}{12} + 0.5 \times 2 \times (5.5 - 5.85)^2 = 0.636\ m^4$$

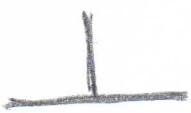


ISOST.



2 IP. INTERNE

Infatti



$i = 6$

$i = 4$