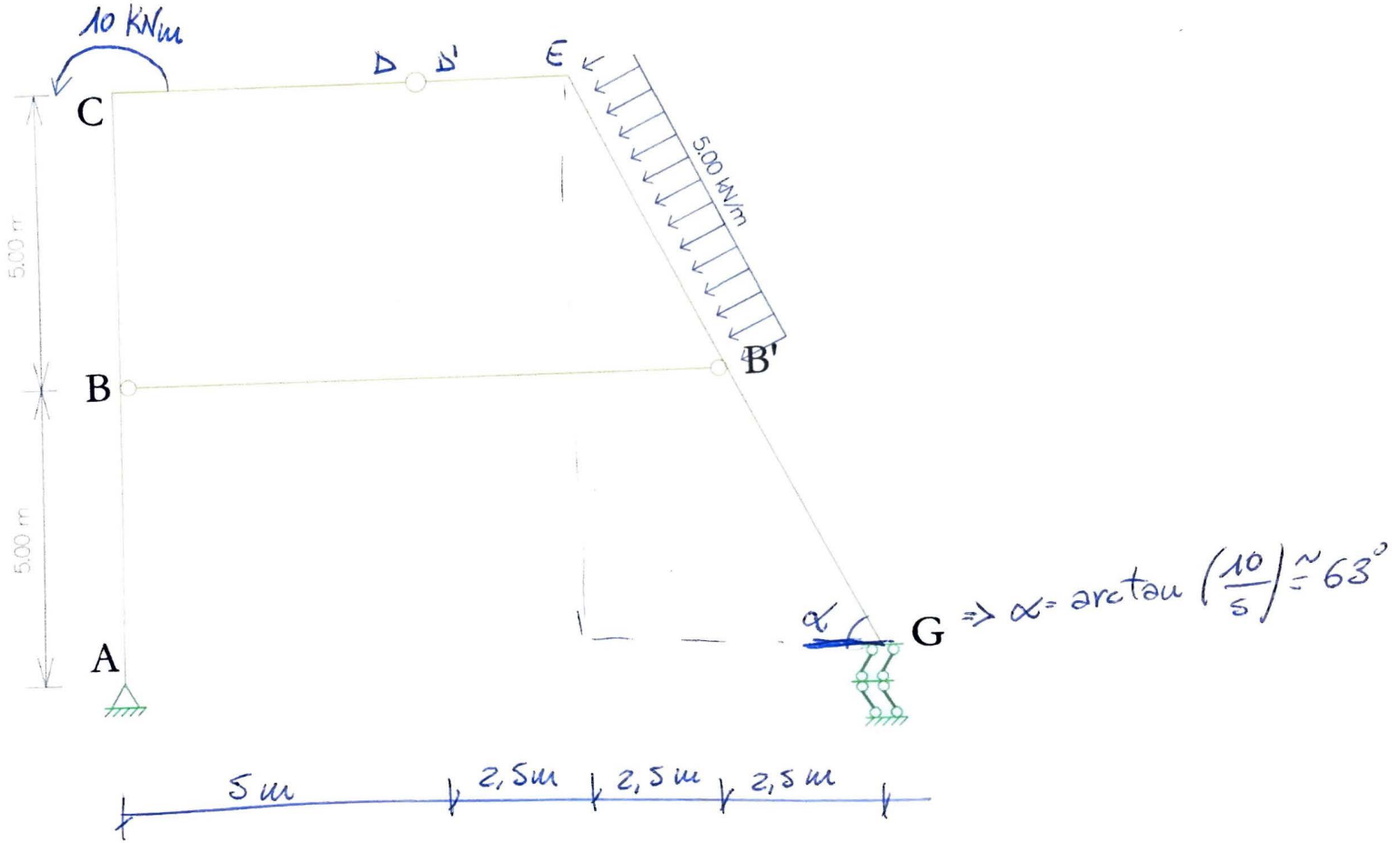
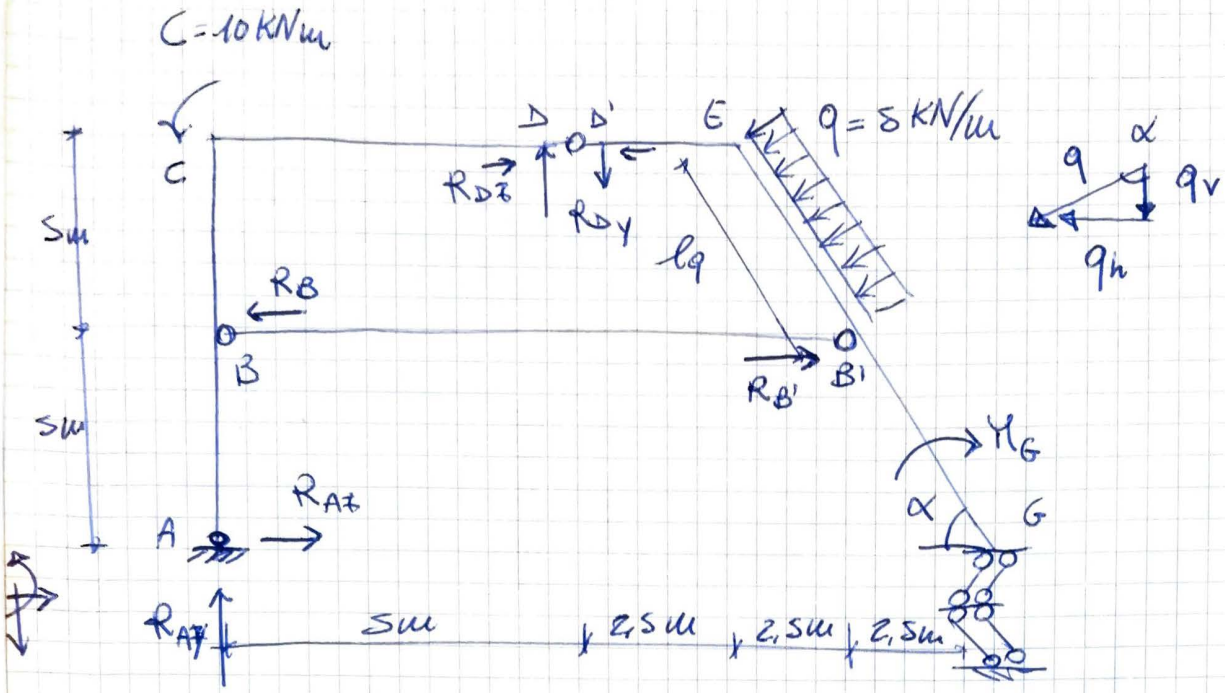


$\Rightarrow \alpha = \arctan\left(\frac{10}{5}\right) \simeq 63°$



$$\alpha = \arctan\left(\frac{10m}{5m}\right) \cong 63,43°$$

$$l_q = \frac{5m}{\operatorname{sen}\alpha} \cong 5,59\ m$$

$$q_v = q\cos\alpha \qquad q_h = q\operatorname{sen}\alpha$$

$$q = 2,24\ KN/m \qquad q_h = 4,47\ KN/m$$

$$\text{(I)}\begin{cases} \downarrow) -R_{Ay} - R_{Dy} = 0 \\ \rightarrow) R_{Az} - R_B + R_{Dz} = 0 \\ A\circlearrowleft) R_B \cdot 5m + C + R_{Dy}\cdot 5m - R_{Dz}\cdot 10m = 0 \end{cases}$$

$$\text{(II)}\begin{cases} \downarrow) R_{Dy} + q\cdot\frac{5m}{\operatorname{sen}\alpha}\cdot\cos\alpha = 0 \\ \rightarrow) -R_{Dz} - q\cdot\frac{5m}{\operatorname{sen}\alpha}\cdot\operatorname{sen}\alpha + R_B = 0 \\ D'\circlearrowleft) R_B\cdot 5m - M_G - q\frac{5m}{\operatorname{sen}\alpha}\cdot\cos\alpha\cdot\frac{3}{2}\cdot 2,5m - q\frac{5m}{\operatorname{sen}\alpha}\operatorname{sen}\alpha\cdot 2,5m = 0 \end{cases}$$

Resolvendo o sistema:

$$R_{AY} = -R_{DY}$$

$$R_{AZ} = R_B - R_{DZ}$$

$$R_B = \frac{R_{DZ} \cdot 10\,m - R_{DY} \cdot 5\,m - C/S}{5\,m}$$

$$R_{DY} = -9\,\frac{5\,m}{\sin\alpha}\cos\alpha$$

$$R_{DZ} = R_B - 9 \cdot 5\,m$$

$$M_G = R_B \cdot 5\,m - 9\,\frac{5\,m}{\sin\alpha}\cos\alpha \cdot \frac{3}{2} \cdot 2{,}5\,m - 9 \cdot 5\,m \cdot 2{,}5\,m$$

$$R_{AY} = 9 \cdot \frac{5\,m}{tg\alpha} = 12{,}5\,KN$$

$$R_{DY} = -9\,\frac{5\,m}{tg\alpha} = -12{,}5\,KN$$

$$R_B = R_{DZ} \cdot 2\,m + 12{,}5\,KN \cdot m - 2\,KN\,m = R_{DZ} \cdot 2\,m + 10{,}5\,KN$$

$$R_{AZ} = R_{DZ} \cdot 2 + 10{,}5\,KN - R_{DZ} = R_{DZ} + 10{,}5\,KN$$

$$R_{DZ} = 2R_{DZ} + 10{,}5\,KN - 25\,KN \Rightarrow R_{DZ} = 25 - 10{,}5 = 14{,}5\,KN$$

$$M_G = R_B \cdot 5\,m - 46{,}875\,KNm - 62{,}5\,KNm = 5R_B - 109{,}475\,KNm$$

$$R_{AY} = \underline{12{,}5\,KN}$$

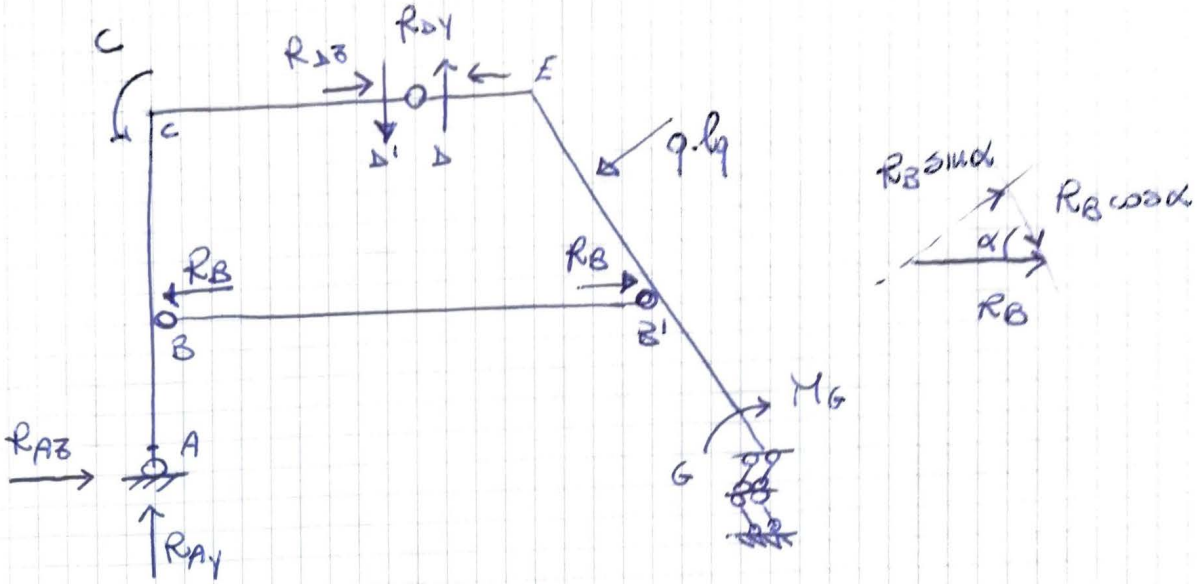
$$R_{AZ} = 14{,}5 + 10{,}5 = \underline{25\,KN}$$

$$R_B = 2 \cdot 14{,}5 + 10{,}5 = \underline{39{,}5\,KN}$$

$$R_{DY} = -12{,}5\,KN$$

$$R_{DZ} = 14{,}5\,KN$$

$$M_G = 5 \cdot 39{,}5 - 109{,}475 = 88{,}025\,KNm$$



(T) taglio

$\frac{dT}{dz} = 0 \Rightarrow T = cost$

$T_A^{\Delta} = -R_{AZ} = -25\ KN$

$T_B^S = T_A^{\Delta} = -25\ KN$

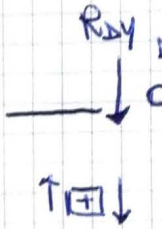
$T_B^{\Delta} = T_B^S + R_B = -25 + 39{,}5 = 14{,}5\ KN$

$T_C^S = T_B^{\Delta} = 14{,}5\ KN$

$T_C^{\Delta} = R_{AY} = 12{,}5\ KN$

$T_{\Delta}^S = T_C^{\Delta} = 12{,}5\ KN$

$T_{\Delta}^{\Delta} = T_{\Delta}^S - R_{\Delta} + R_{\Delta} = 12{,}5\ KN$

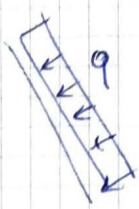


$T = R_{\Delta Y} = 12{,}5\ kN$

$T_E^S = T_{\Delta}^{\Delta} = 12{,}5\ KN$

$T_E^{\Delta} = q \cdot l_q - R_B \sin\alpha = q \cdot \frac{5\ m}{\sin\alpha} - 39{,}5 \cdot \sin\alpha = -7{,}379\ kN$

↓ conviene fare l'equilibrio a destra di E



$\frac{dT}{dz} + q = 0$

$\Downarrow$

$T = -qz \cdot cost$

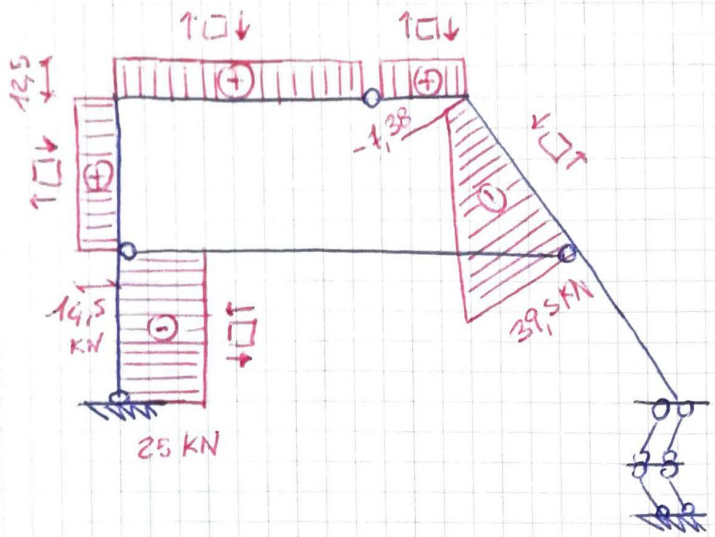
il taglio varia linearmente

$T_{B'}^S = -R_B \sin\alpha = -35{,}33$

$T_{B'}^{\Delta} = T_E^{\Delta} - q \cdot l_q = -35{,}33$

$T_B^{\Delta} = T_B^S + R_B \sin\alpha = 0$

$T_G = 0$] $\frac{dT}{dz} = 0$ costante



(T)

Momento (M)

$$M_A^D = 0$$

$$M_B^S = -R_{AZ} \cdot 5\,m = -125\ KNm$$

$$M_B^D = M_B^S = -125\ KNm$$

$$M_C^S = -R_{AZ} \cdot 10\,m + R_B \cdot 5\,m = -52{,}5\ KNm$$

$$M_C^D = -R_{AZ} \cdot 10\,m + R_B \cdot 5\,m - C = -62{,}5\ KNm$$

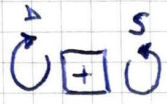
$M_D^S = M_D^D = 0$ (perché c'è una cerniera)

proviamo a verificarlo con l'equilibrio

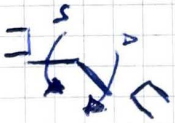
$$M_D^S = -R_{AZ} \cdot 10\,m + R_B \cdot 5m - C + R_{AY} \cdot 5\,m = 0$$

$$12{,}5 \cdot 5 = 62{,}5\ KNm$$

$$M_E^S = +R_{AY} \cdot 2{,}5\,m = 31{,}25\ KNm$$



$M_E^D = M_E^S$



$M_B^S = M_B^D = -M_G = -88{,}025\ KNm$

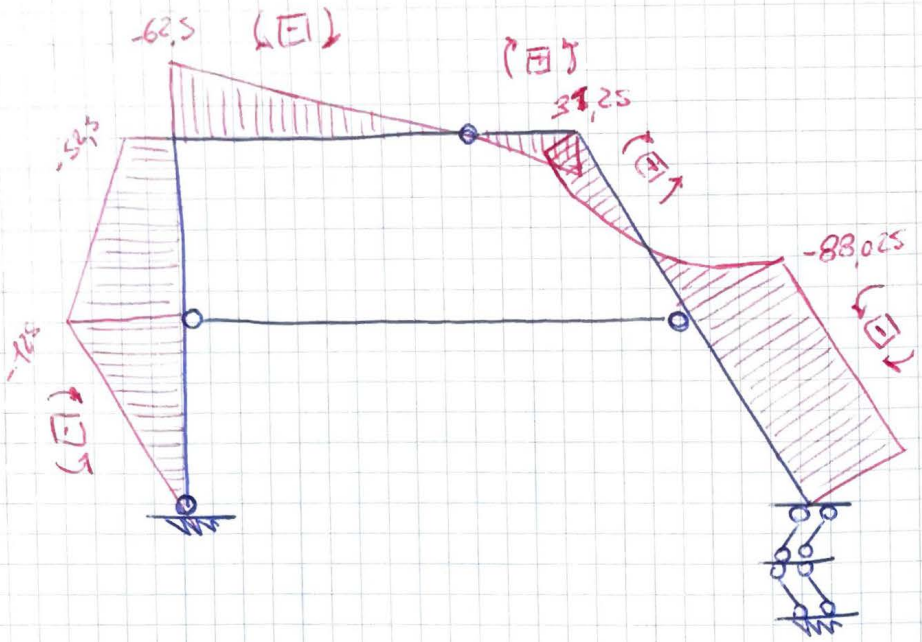


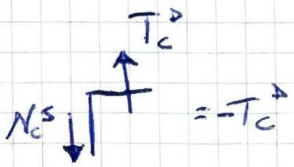
Diagramma (N)

$N_A^{\Delta} = -R_{AY} = -12,5\ KN$

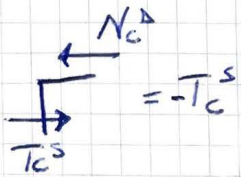
$N_B^{S} = N_A^{\Delta} = -12,5\ KN$

$N_B^{\Delta} = N_B^{S} = -12,5\ KN$

$N_C^{S} = N_B^{\Delta} = -12,5\ KN$



$N_C^{\Delta} = -R_{AZ} + R_B = 14,5\ KN$



$N_{\Delta}^{S} = N_C^{\Delta} = 14,5\ KN$

$N_{\Delta}^{\Delta} = N_{\Delta}^{S} + R_{BZ} - R_{AZ} = 14,5\ KN$

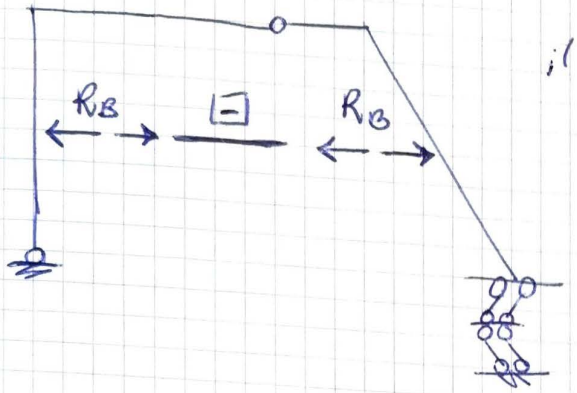
$N_E^{S} = N_{\Delta}^{\Delta} = 14,5\ KN$

$N_E^{\Delta} = +R_B \cos\alpha = 17,66\ KN$

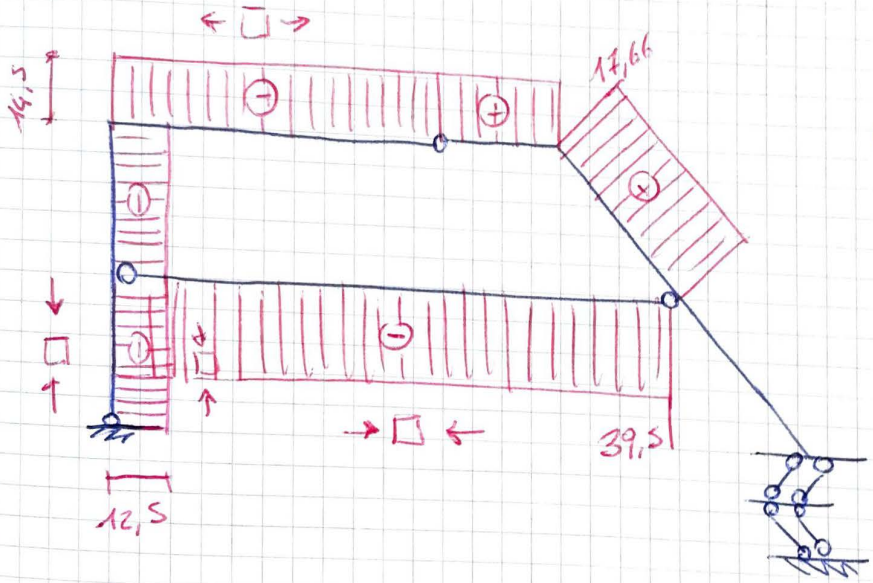
$$N_{B'}^{S} = N_{E}^{\Delta} = 17,66\ kN$$

$$\begin{cases} N_{B'}^{\Delta} = N_{B'}^{S} - R_B \cos\alpha = 0 \\ N_{B'}^{\Delta} = N_G = 0 \end{cases}$$ da entrambi i lati

Sforzo normale nel pendolo



il pendolo è compresso con R_B



(N)