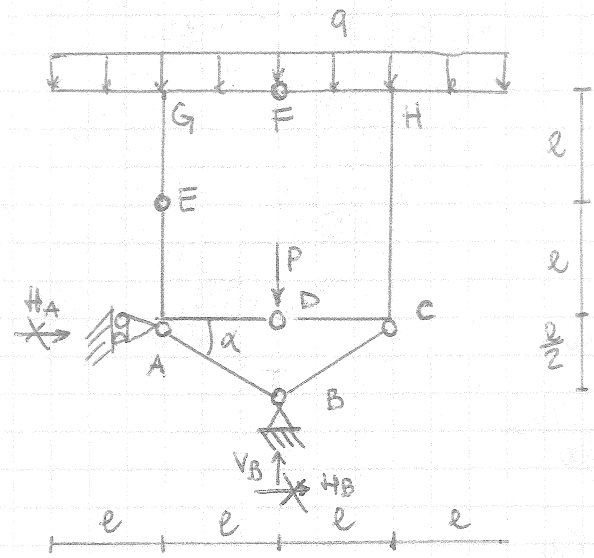
FILA A

21/12/2016

1)



$q = 2000\ N/m$

$\ell = 3m$

$P = q\ell$

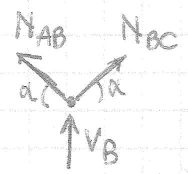
$\tan\alpha = (1/2)$

$\uparrow)\ V_B - q4\ell - q\ell = 0 \qquad V_B = 5q\ell$

$B\circlearrowleft)\ H_A \cdot \ell/2 = 0 \qquad H_A = 0$

$\rightarrow)\ H_B = 0$

NODO B

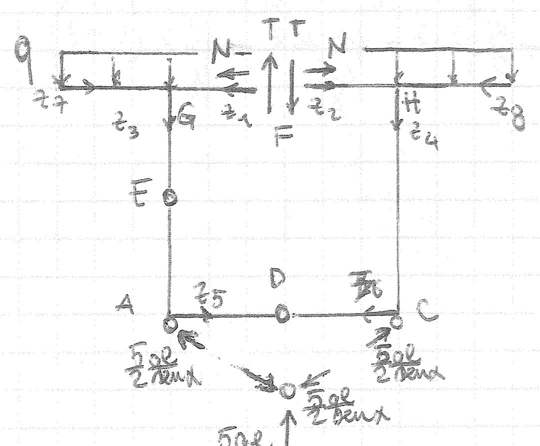


$\rightarrow)\ N_{BC} \cdot \cos\alpha - N_{AB} \cdot \cos\alpha = 0$

$N_{BC} = N_{AB}$

$\uparrow)\ V_B + N_{AB} \cdot \sin\alpha + N_{BC} \cdot \sin\alpha = 0$

$N_{AB} = \dfrac{-V_B}{2\sin\alpha}$



D$\circlearrowleft$) AUSILIARIA DAEGF

$-\dfrac{5q\ell}{2\sin\alpha} \cdot \sin\alpha \cdot \ell + 2q\ell^2 + N \cdot 2\ell = 0$

$N = \dfrac{q\ell}{4}$

E$\circlearrowleft$) AUSILIARIA EGF

$N \cdot \ell + T \cdot \ell = 0 \qquad T = -N = -\dfrac{q\ell}{4}$

$N(z_1) = -q\ell/4 = -1500\ N$

$N(z_2) = -q\ell/4 = -1500\ N$

$N(z_3) = -2q\ell - q\ell/4 = -13500\ N$

$N(z_4) = -2q\ell + q\ell/4 = -10500\ N$

$N(z_5) = q\ell/4 + \frac{5}{2} q\ell \tan\alpha = 31500\ N$

$N(z_6) = q\ell/4 + \frac{5}{2} q\ell \tan\alpha = 31500\ N$

$N(z_7) = N(z_8) = 0$

$T(z_1) = q\ell/4 + qz$

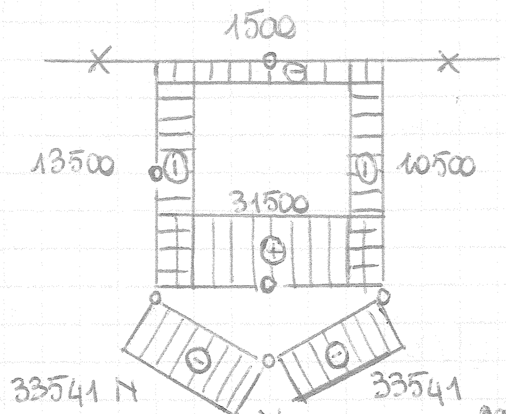
$T(z_2) = q\ell/4 - qz$

$T(z_3) = -q\ell/4 = -1500\ N$

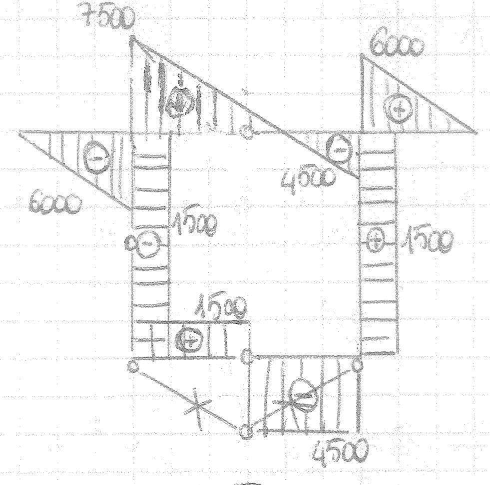
$T(z_4) = q\ell/4 = 1500\ N$

$T(z_5) = \dfrac{q\ell}{4} - 2q\ell + \frac{5}{2}q\ell = +1500\ N$

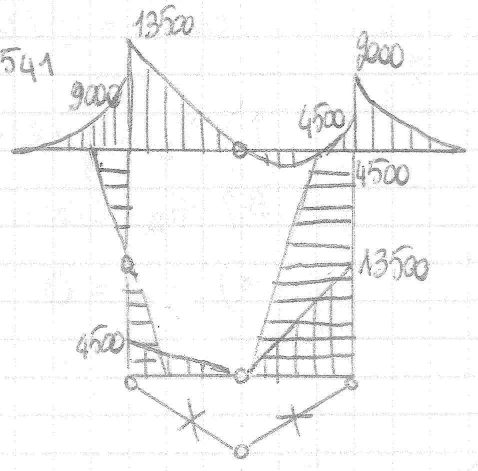
$T(z_6) = \dfrac{q\ell}{4} - 2q\ell + \frac{5}{2}q\ell = -4500\ N$



N



T



M

$$M(z_7) = M(z_8) = -\frac{q \cdot z^2}{2}$$

$$M(z_1) = -\frac{ql}{4}z - \frac{qz^2}{2}$$

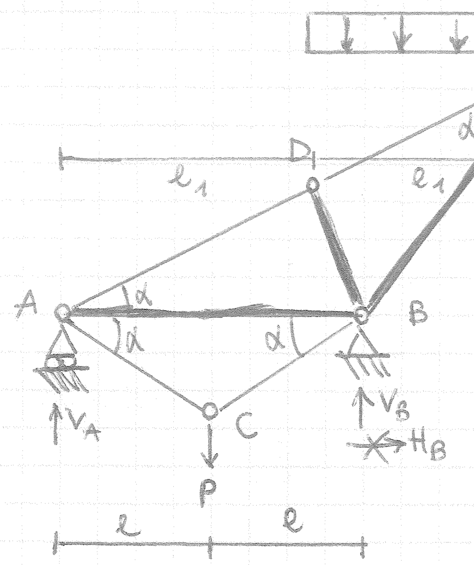
$$M(z_5) = -q2lz + \frac{5}{2}qlz - \frac{ql}{4}2l + \frac{ql}{4}(l-z)$$

$$M(z_3) = -\frac{ql^2}{2} + \frac{ql^2}{4} + \frac{ql^2}{2} - \frac{ql}{4}z$$

$$M(z_4) = -\frac{ql^2}{2} - \frac{ql^2}{4} + \frac{ql^2}{2} - \frac{ql}{4}z$$

$$M(z_6) = q2l \cdot z + \frac{5}{2}ql \cdot z - \frac{ql}{4} \cdot 2l - \frac{ql}{4} \cdot (l-z)$$

2)



$q = 2000$ N/m

$P = ql$

$l = 2m$

$\alpha = 30°$ $\quad \beta = 60°$

$\rightarrow)\ H_B = 0$

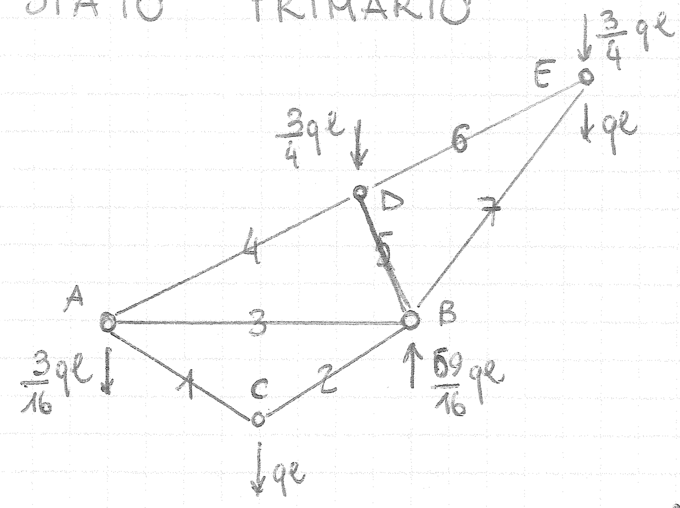
$AD = AB \cdot \cos\alpha = l\sqrt{3} = DE$

$l_1 = DE \cdot \cos\alpha = \frac{3}{2} l$

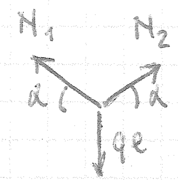
$A \circlearrowright)\ V_B \cdot 2l - q l_1 \cdot \left(\frac{3}{2} l_1\right) - ql^2 - ql \cdot 2l_1 = 0 \qquad V_B = \frac{59}{16} ql$

$\uparrow)\ V_A = q l_1 + 2ql - \frac{59}{16} ql = -\frac{3}{16} ql$

STATO PRIMARIO



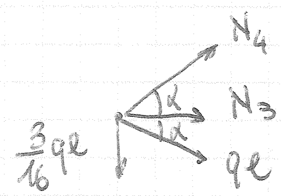
NODO C



$\rightarrow)\ N_1 = N_2$

$\uparrow)\ N_1 = \frac{ql}{2 \operatorname{sen}\alpha} = ql$

NODO A



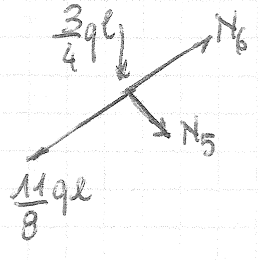
$\uparrow)\ N_4 \operatorname{sen}\alpha - \frac{3}{16} ql - ql \operatorname{sen}\alpha = 0$

$N_4 = \frac{11}{8} ql$

$\rightarrow)\ N_4 \cos\alpha + N_3 + ql \cos\alpha = 0$

$N_3 = -\frac{19}{16} ql\sqrt{3}$

NODO D



$\nearrow)\ -\frac{11}{8} ql + N_6 - \frac{3}{4} ql \operatorname{sen}\alpha = 0$

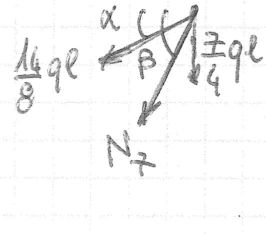
$N_6 = \frac{14}{8} ql$

$\searrow)\ N_5 + \frac{3}{4} ql \cos\alpha = 0$

$N_5 = -\frac{3\sqrt{3}}{8} ql$

NODO E

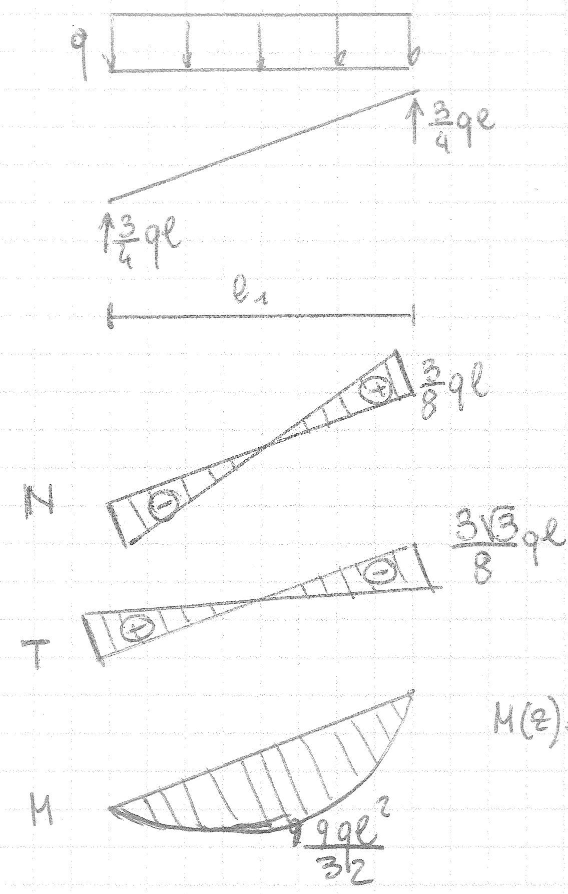
$\rightarrow)\ -\frac{14}{8} ql \cos\alpha - N_7 \cos\beta = 0$



$N_7 = -\frac{14}{8} \sqrt{3}\, ql$

m	N	[N]
1	$q\ell$	4000
2	$q\ell$	4000
3	$-\frac{16}{16}\sqrt{3}\,q\ell$	-8227
4	$\frac{11}{8}q\ell$	5500
5	$-\frac{3\sqrt{3}}{8}q\ell$	-2598
6	$\frac{14}{8}q\ell$	7000
7	$-\frac{14}{8}\sqrt{3}\,q\ell$	-12124

STATO SECONDARIO



$$M(z) = \frac{3}{4}q\ell z\cos\alpha - \frac{qz^2\cos^2 z}{2}$$