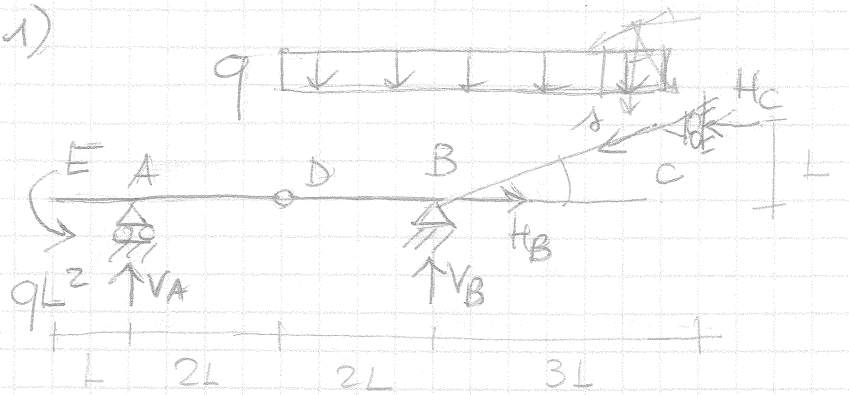
I PARZIALE DI SDC AA 17/18 17/11/17

1)



$L = 1\,m$; $q = 4000\,N/m$

$\operatorname{tg}\alpha = \frac{1}{3}$

$\cos\alpha = 3/\sqrt{10}$

$\sin\alpha = 1/\sqrt{10}$

D ↺ tratto ED

$-V_A 2L + qL^2 = 0$

$\Rightarrow V_A = \frac{qL}{2} = 2\,kN$

↑) $V_B = -V_A + 5qL =$

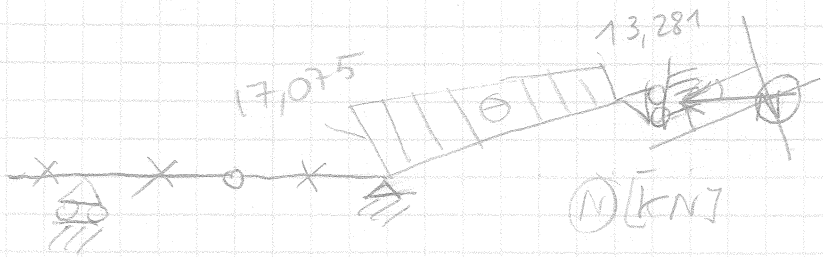
$= \frac{9}{2} qL = 18\,kN$

D ↻ tratto CBD

$H_C 2L - \frac{25}{2} qL^2 + V_B 2L = 0$

$H_C = \frac{25}{2} qL - 9qL = \frac{7}{2} qL$

$= 14\,kN$

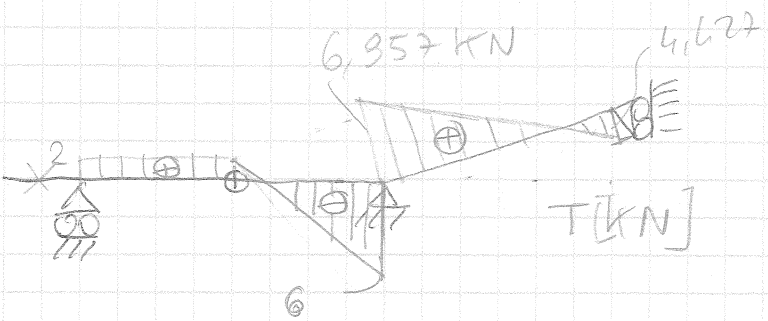


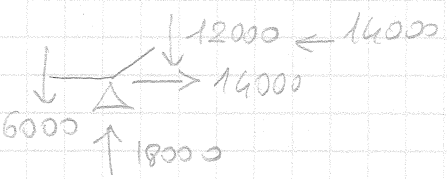
$N(s) = -\frac{7}{2} qL\cos\alpha - qs\cos\alpha\sin\alpha$

$N(0) = -\frac{7}{2} qL\cos\alpha = -13,281\,kN$

$N\left(\frac{3L}{\cos\alpha}\right) = -\frac{7}{2} qL\cos\alpha - 3qL\sin\alpha =$

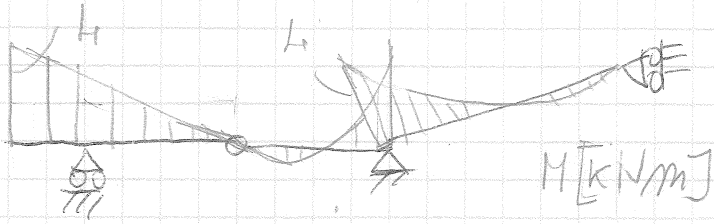
$= -17,075\,kN$





$T(s) = -\frac{7}{2} qL\sin\alpha + qs\cos^2\alpha \Rightarrow T(0) = -\frac{7}{2} qL\sin\alpha = -4,427\,kN$

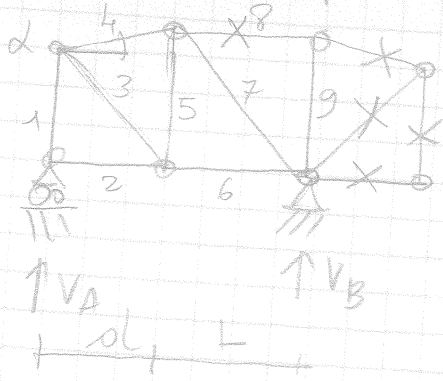
$T\left(\frac{3L}{\cos\alpha}\right) = -\frac{7}{2} qL\sin\alpha + 3qL\cos\alpha = +6,957\,kN$



$M_{BA} = -qL^2 + \frac{qL}{2} HL - 2qL^2 =$

$= -4000\,Nm$

$M_{BC} = \frac{7}{2} qL^2 - 3qL^2 \frac{3}{2} = -qL^2$



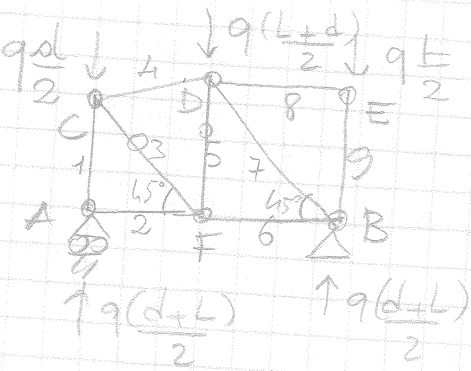
$V_A + V_B = q(d+L)$; $H_B = 0$

Al ser $V_B = q\frac{(d+L)}{2} = 2414,2\ N$

$d = 1\ m$; $L = d\sqrt{2}$

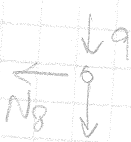
$q = 2000\ N/m$; $tg\alpha = \frac{L-d}{d} = \sqrt{2}-1$

$sen\alpha = \frac{tg^2\alpha}{\sqrt{1+tg^2\alpha}} = 0,38$; $cos\alpha = 0,923$



1	$-2414,2$
2	0
3	$1414,21$
4	$-1082,39$
5	-1000
6	$+1000$
7	$-1414,21$
8	0
9	$-1414,2$

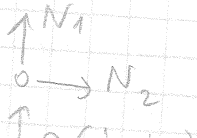
NODO (E)



$N_8 = 0$

$N_9 = -q\frac{L}{2} = -1414,2\ N$

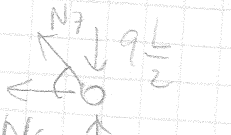
NODO (A)



$N_2 = 0$

$N_1 = -q\frac{(d+L)}{2} = -2414,2\ N$

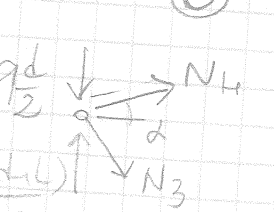
NODO (B)



$\uparrow) \; N_7\frac{\sqrt{2}}{2} - q\frac{L}{2} + q\frac{(d+L)}{2} = 0 \Rightarrow N_7 = -\frac{qd}{\sqrt{2}}$

$\rightarrow) \; N_6 = -N_7\frac{\sqrt{2}}{2} + \frac{qd}{\sqrt{2}}\frac{\sqrt{2}}{2} = +1000\ N$ $\Big] = -1414,21$

NODO (C)



$\rightarrow) \; N_4 cos\alpha = N_3\frac{\sqrt{2}}{2} \Rightarrow N_4 = \frac{N_3\sqrt{2}}{2cos\alpha}$

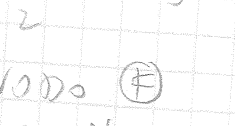
$\uparrow) \; q\frac{L}{2} + N_4 sen\alpha - N_3\frac{\sqrt{2}}{2} = 0$

$N_3\frac{\sqrt{2}}{2}(1+\sqrt{2}-1) = q\frac{L}{2} \Rightarrow N_3 = qL/2$

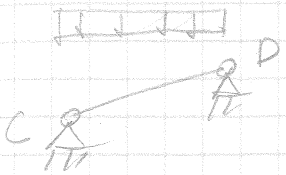
$N_4 = -q\frac{\sqrt{2}}{4}\frac{L}{cos\alpha} = -qd/2cos\alpha = -1082,39\ N$

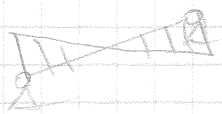
$N_5 = -q\frac{L}{2}\frac{\sqrt{2}}{2} = -q\frac{d\sqrt{2}}{2}\frac{\sqrt{2}}{2} = -1000\ N$

NODO (F)

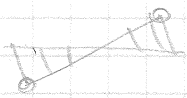


SECONDARIO

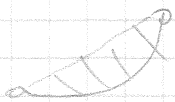




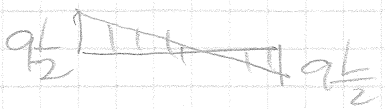
(N) sec.



(T) sec.



(M) sec.



(T)

(M)