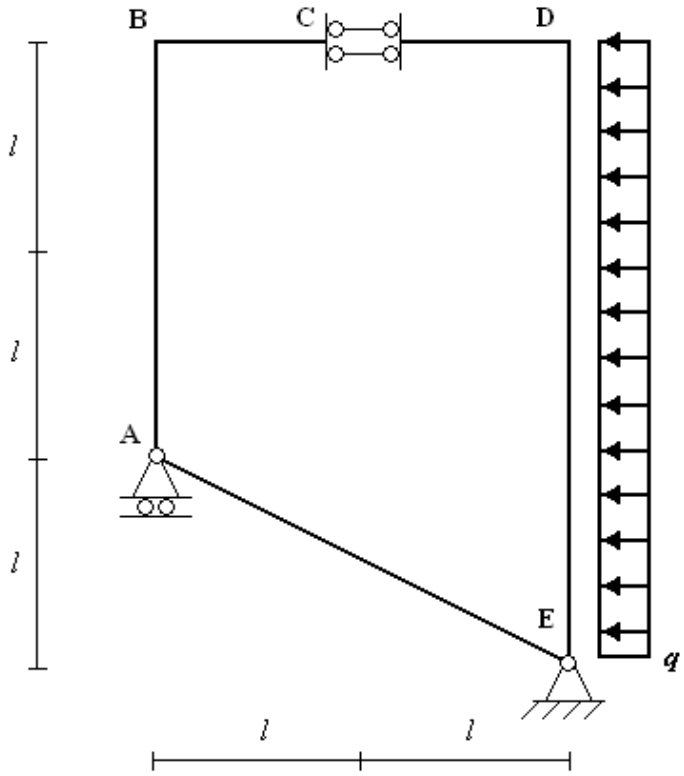
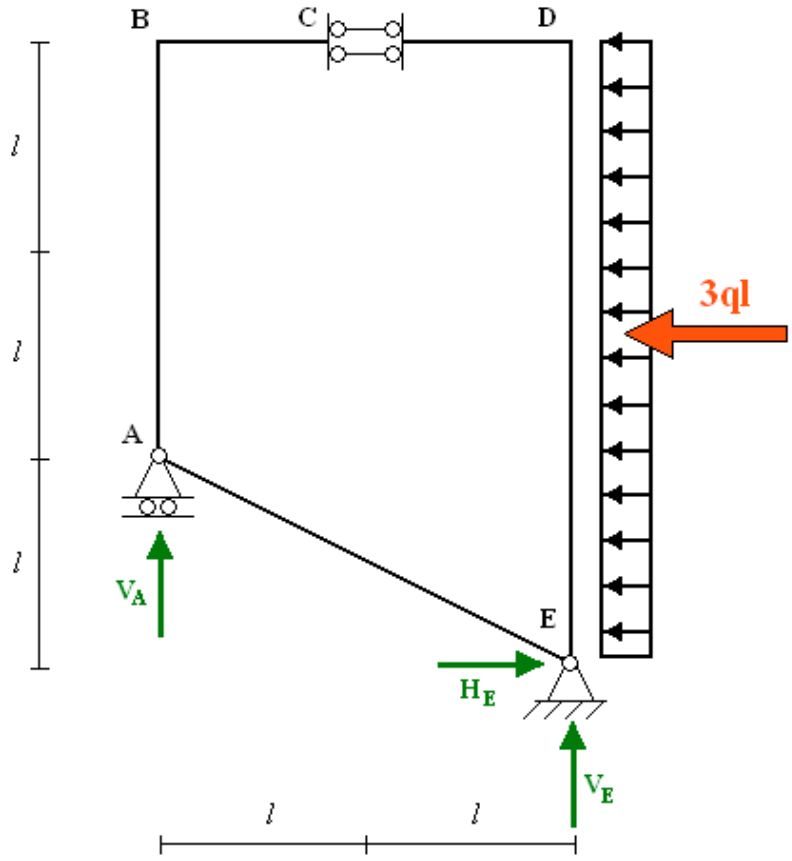
Calcolare le reazioni vincolari e determinare le caratteristiche della sollecitazione rappresentandone in scala i diagrammi quotati .

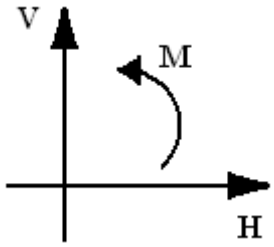


Si ha :

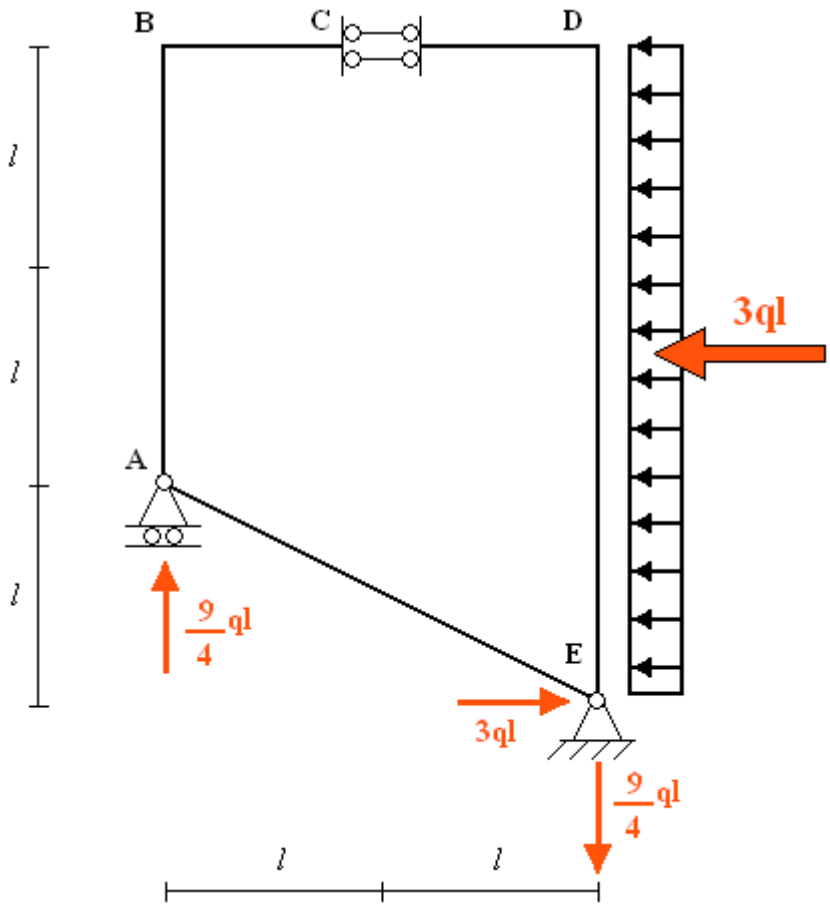


Poiché la struttura è esternamente isostatica applicando le equazioni cardinali della statica si ha :

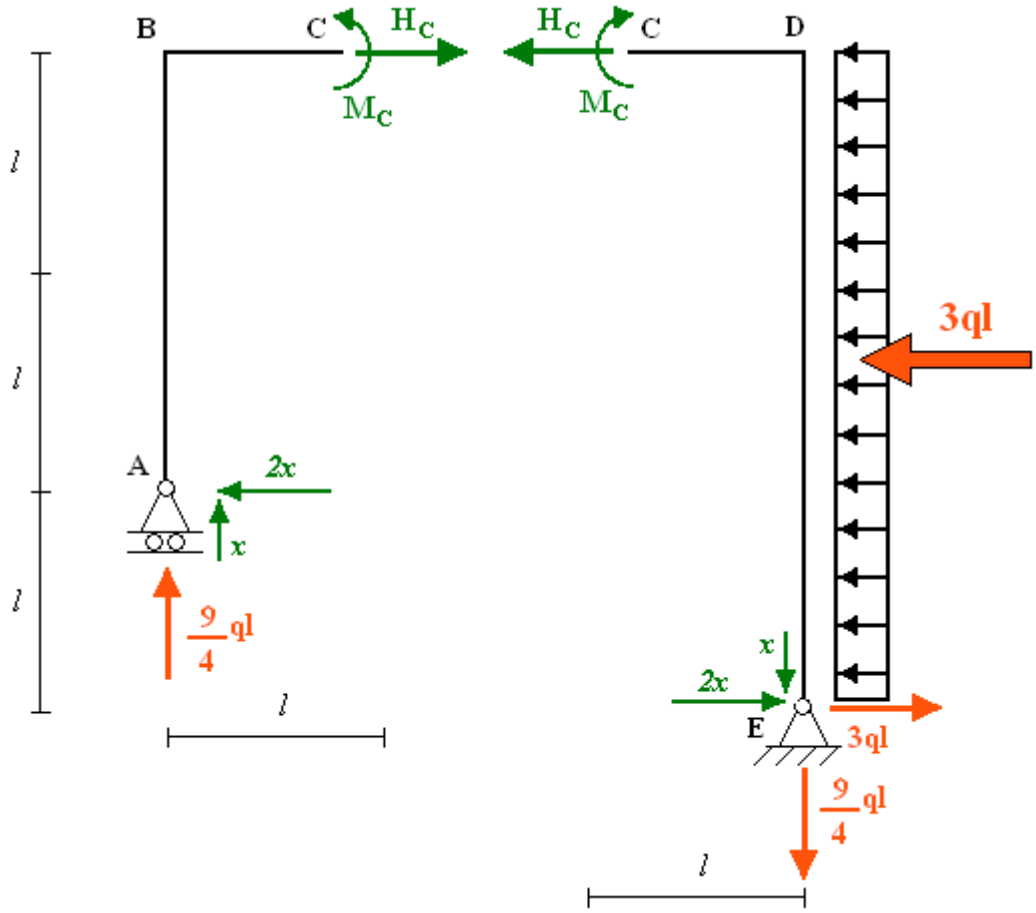
$$\begin{cases} \sum_H \ : \ H_E - 3ql = 0 \\ \sum_V \ : \ V_A + V_E = 0 \\ \sum_M (E): \ -V_A \cdot 2l + 3ql \cdot \frac{3}{2} l = 0 \end{cases} \Rightarrow \begin{cases} \sum_H \ : \ H_E = 3ql \\ \sum_V \ : \ V_E = -\frac{9}{4} ql \\ \sum_M (E): \ V_A = \frac{9}{4} ql \end{cases}$$



Il sistema equilibrato è :



Isolando la struttura per tronchi e riapplicando le equazioni cardinali , si ha :

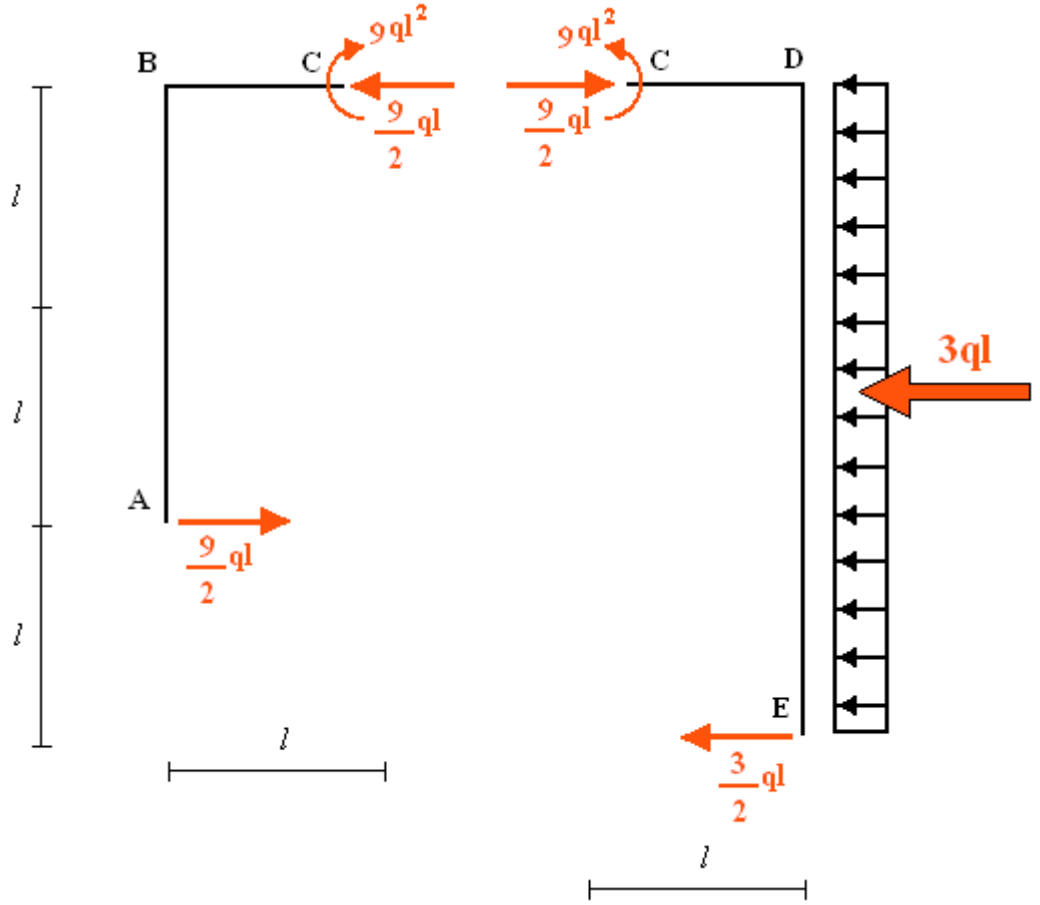


Per il I° tronco :

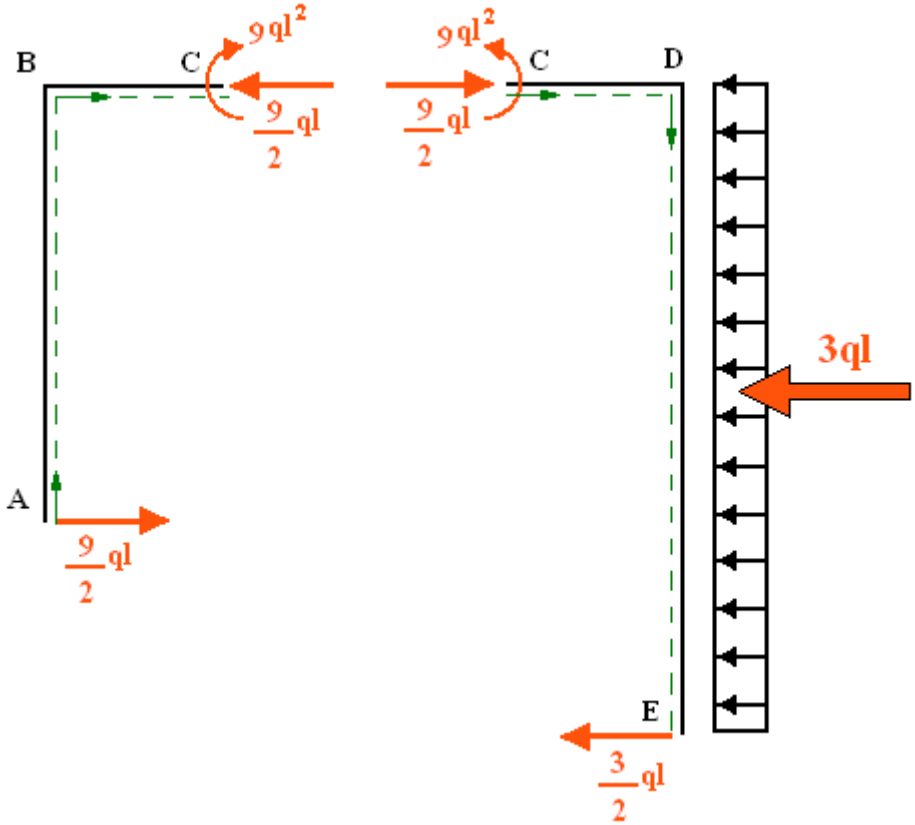
$$\begin{cases} \sum_H : \; -2x + H_C = 0 \\ \sum_V : \; \frac{9}{4}ql + x = 0 \\ \sum_M (A) : \; -H_C \cdot 2l + M_C = 0 \end{cases} \Rightarrow \begin{cases} \sum_H : \; H_C = -\frac{9}{2}ql \\ \sum_V : \; x = -\frac{9}{4}ql \\ \sum_M (E) : \; M_C = -9ql^2 \end{cases}$$

Di conseguenza risulta determinato anche il II° tronco .

Si ottiene quindi per i rispettivi :



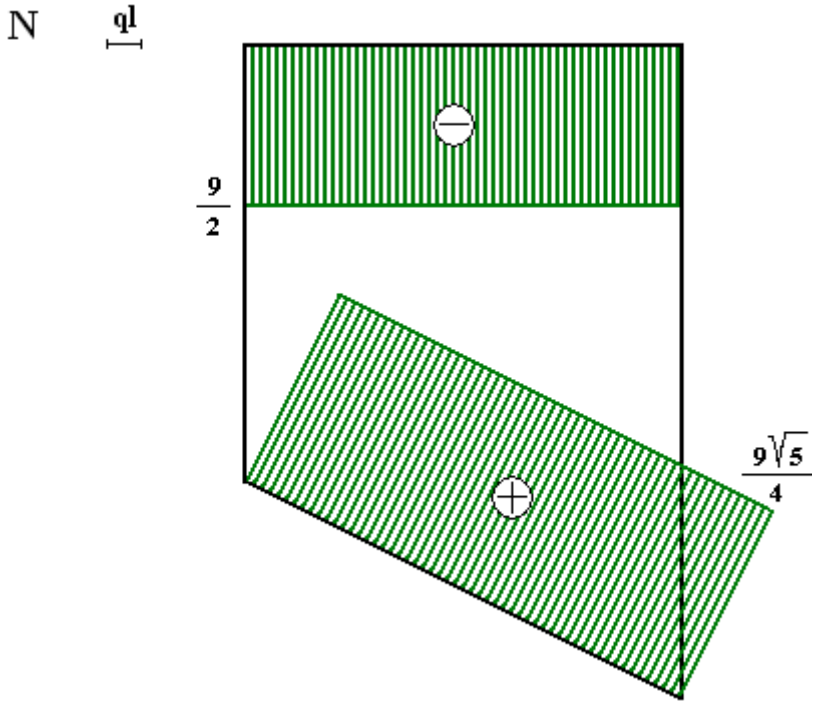
Per la determinazione delle funzioni che esprimono le caratteristiche della sollecitazione considereremo il sistema :

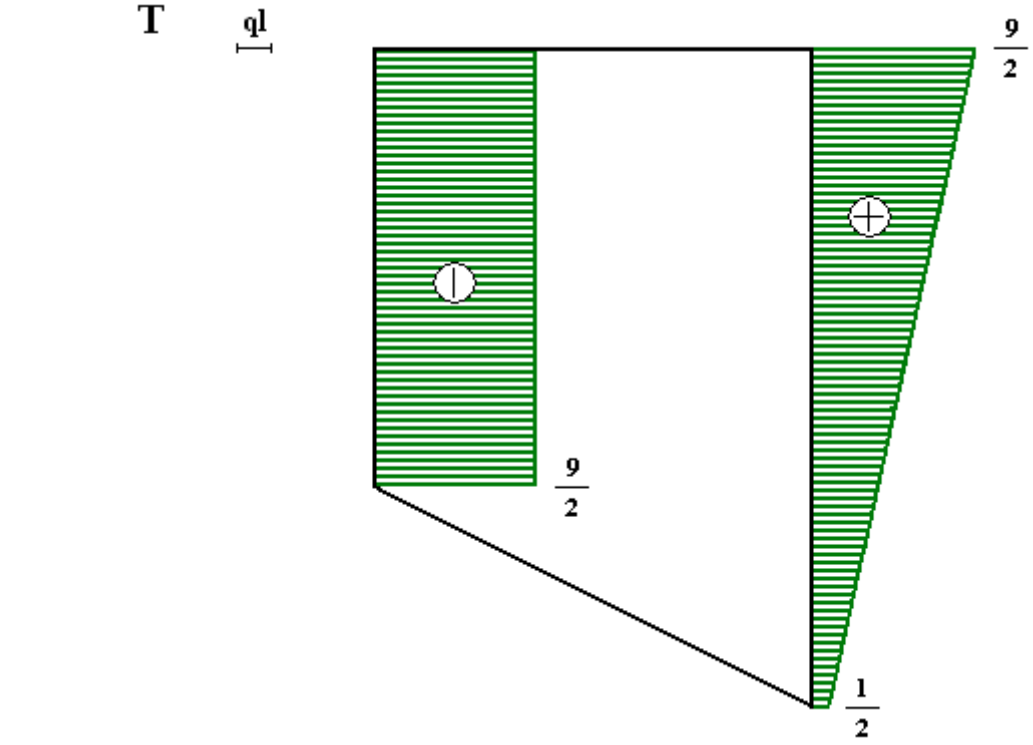


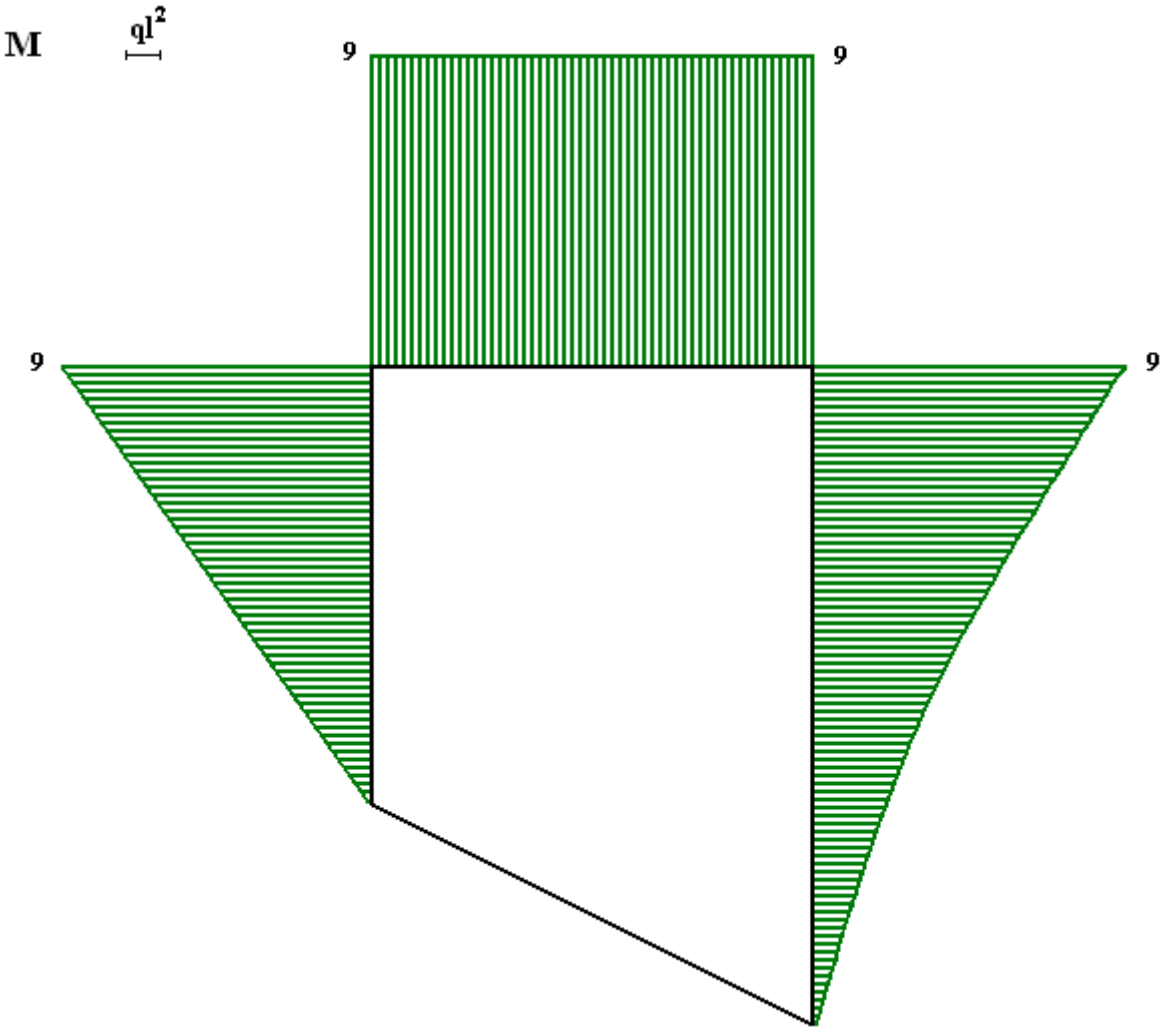
Le caratteristiche della sollecitazione sono definite da:

Tratto	N(x)	T(x)	M(x)
$\overline{AB}$ $0 \le x \le 2l$	0	$-\frac{9}{2}ql$	$-\frac{9}{2}qlx$
$\overline{BC}$ $0 \le x \le l$	$-\frac{9}{2}ql$	0	$-9ql^2$
$\overline{CD}$ $0 \le x \le l$	$-\frac{9}{2}ql$	0	$-9ql^2$
$\overline{DE}$ $0 \le x \le 2l$	0	$\frac{9}{2}ql - qx$	$-9ql^2 + \frac{9}{2}qlx - \frac{qx^2}{2}$
$\overline{AE}$ $0 \le x \le \sqrt{5}l$	$\frac{9}{4}\sqrt{5}ql$	0	0

I relativi diagrammi :




T
ql
9/2
9/2
1/2


M
ql²
9
9
9
9