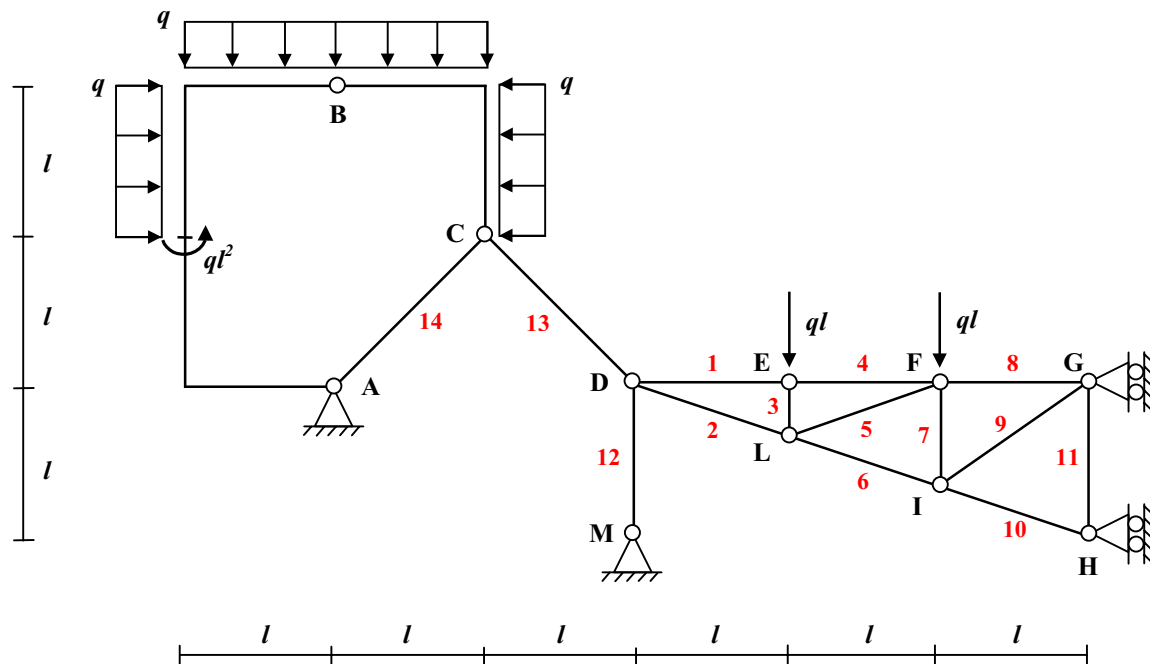
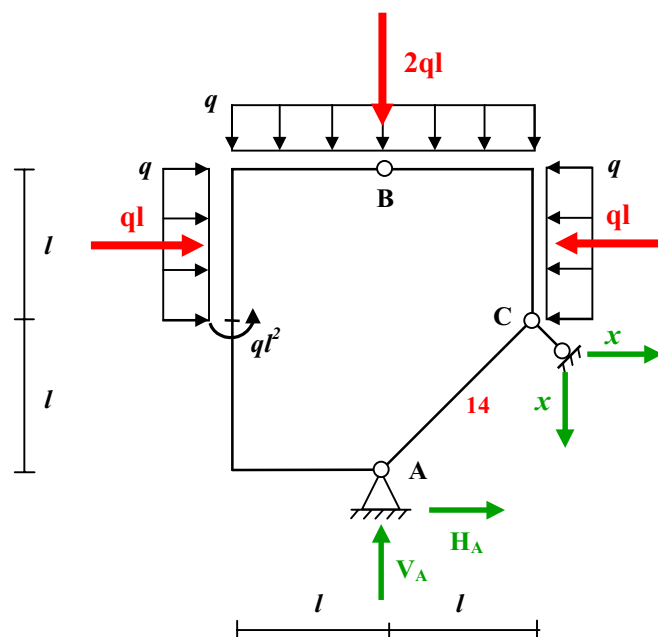


Determinare le reazioni vincolari e tracciare i diagrammi di sollecitazione della seguente struttura , riportando in una apposita tabella i valori degli sforzi assiali per le aste numerate .



Calcolo delle reazioni vincolari :

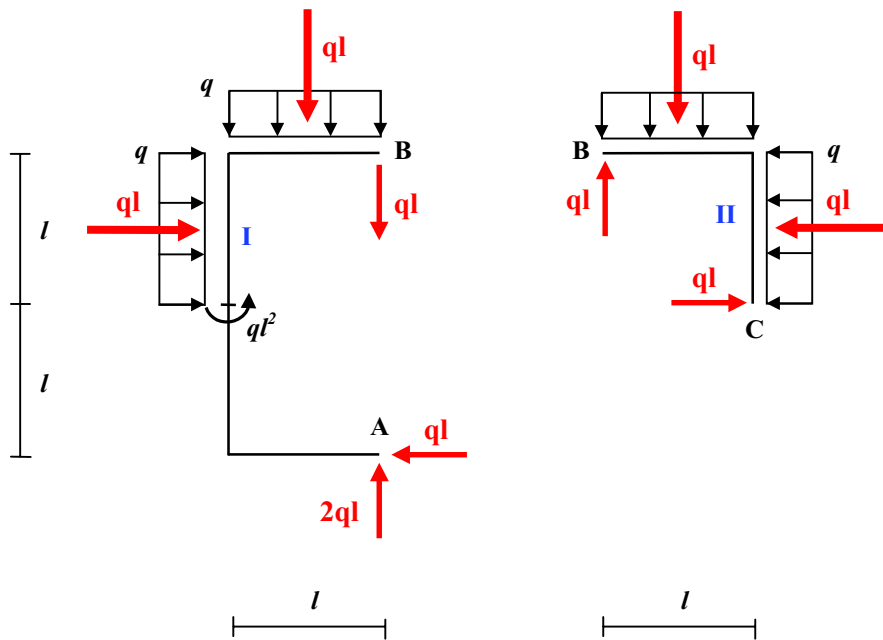
Considerando la sottostruttura isostatica ABC , tramite equazioni cardinali della statica avremo :



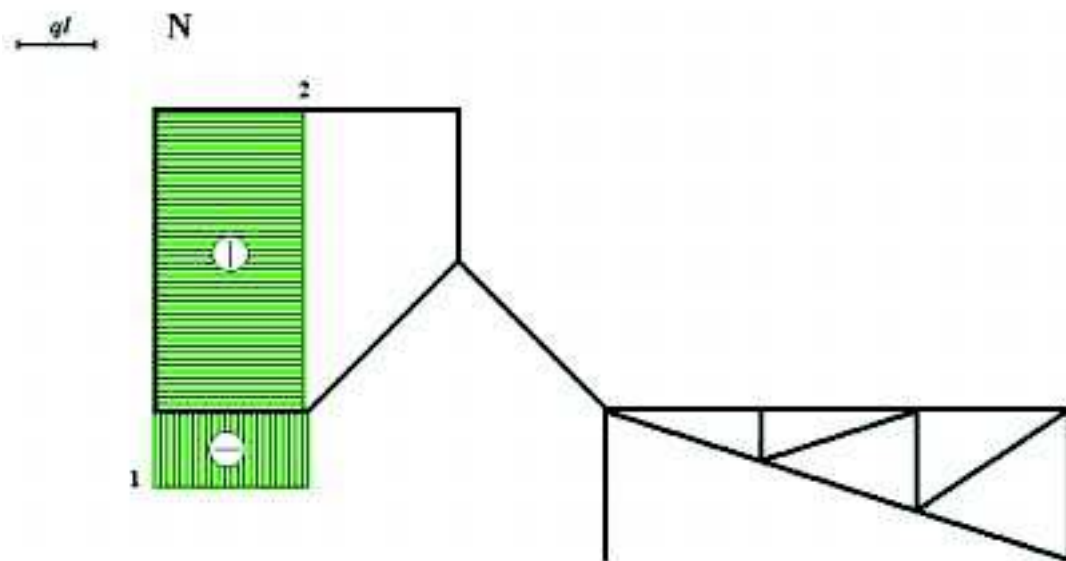
The diagram shows a frame structure with a square central part and a horizontal extension to the left. The vertical height is $2l$ and the horizontal width is $2l$. The frame is divided into three regions: I (left vertical member), II (right vertical member), and B (top horizontal member). Region I is subjected to a horizontal distributed load q and a point load ql at the bottom. Region II is subjected to a horizontal distributed load q and a point load ql at the top. Region B is subjected to a vertical distributed load q and a point load $2ql$ at the center. A curved load ql^2 is applied at the bottom-left corner. A support is located at the bottom-left corner, and a roller support is located at the bottom-right corner. A coordinate system x is shown at the bottom-right corner, pointing upwards and to the right. The reaction forces at the supports are indicated: $\frac{5}{2}ql$ (vertical) and $\frac{ql}{2}$ (horizontal) at the bottom-left support, and $\frac{ql}{2}$ (vertical) and $\frac{ql}{2}$ (horizontal) at the bottom-right support.

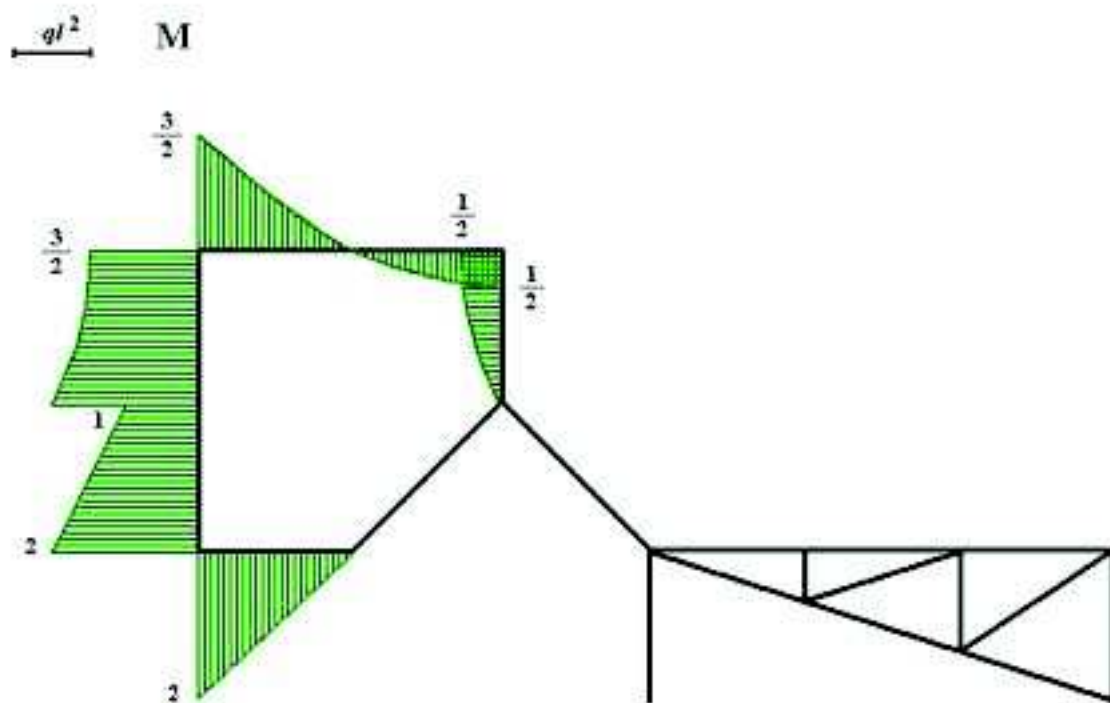
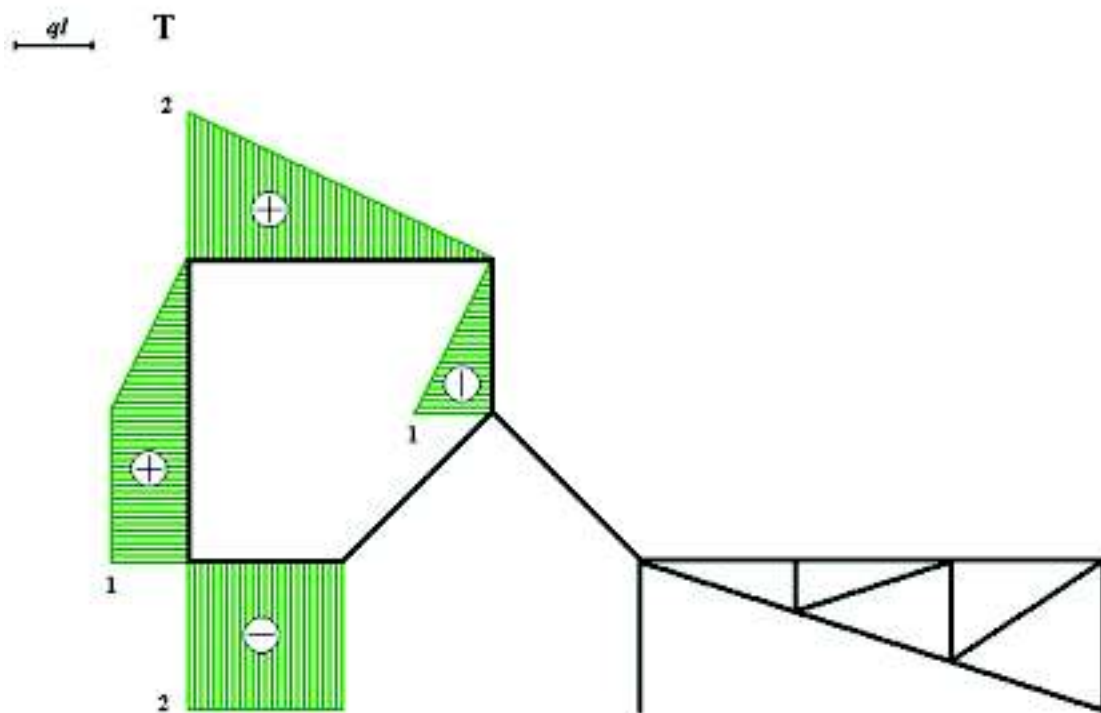
$$\sum_M B : -\frac{ql}{2} \cdot l + \frac{ql}{2} \cdot l - x \cdot l\sqrt{2} - \frac{ql}{2} \cdot l - \frac{ql}{2} \cdot l \Rightarrow x = -\frac{ql}{\sqrt{2}}$$

Isolando di conseguenza i due tronchi , per il relativo equilibrio si ha :

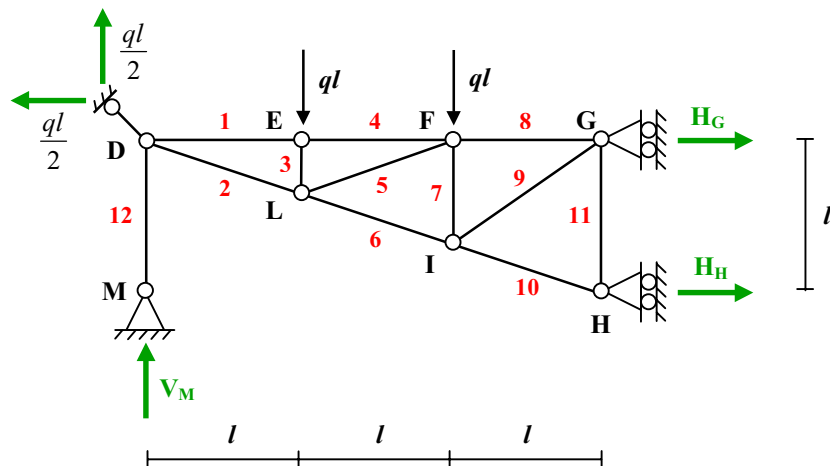


Diagrammi delle caratteristiche di sollecitazione .



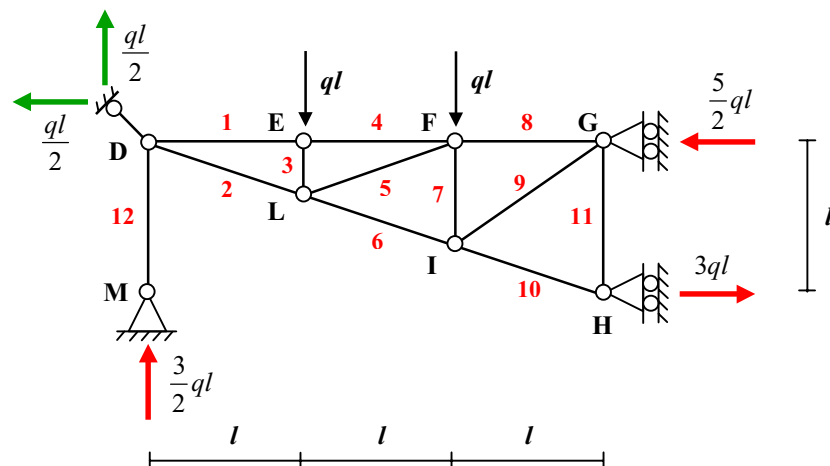


Per la reticolare MDGH , applicando le equazioni cardinali , si ottiene :



$$\left\{ \begin{array}{l} \sum_H : -\frac{ql}{2} + H_H + H_G = 0 \\ \sum_V : V_M + \frac{ql}{2} - ql - ql = 0 \\ \sum_M (D) : -ql \cdot l - ql \cdot 2l + H_H \cdot l = 0 \end{array} \right. \Rightarrow \left\{ \begin{array}{l} H_G = -\frac{5}{2}ql \\ V_M = \frac{3}{2}ql \\ H_H = 3ql \end{array} \right.$$

La struttura equilibrata risulta quindi :



EQUILIBRIO NODO D 	EQUILIBRIO NODO E
EQUILIBRIO NODO L 	EQUILIBRIO NODO F
EQUILIBRIO NODO I 	EQUILIBRIO NODO G

Riassumendo :

ASTE	TIRANTE	PUNTONE	ASTE	TIRANTE	PUNTONE
1		$\frac{11}{2}ql$	8		$4ql$
2	$2\sqrt{10}ql$		9	$\frac{\sqrt{13}}{2}ql$	
3		ql	10	$\sqrt{10}ql$	
4		$\frac{11}{2}ql$	11		ql
5	$\frac{\sqrt{10}}{2}ql$		12		$\frac{3}{2}ql$
6	$\frac{3}{2}\sqrt{10}ql$		13	$\frac{\sqrt{2}}{2}ql$	
7		$\frac{3}{2}ql$	14		$\frac{\sqrt{2}}{2}ql$