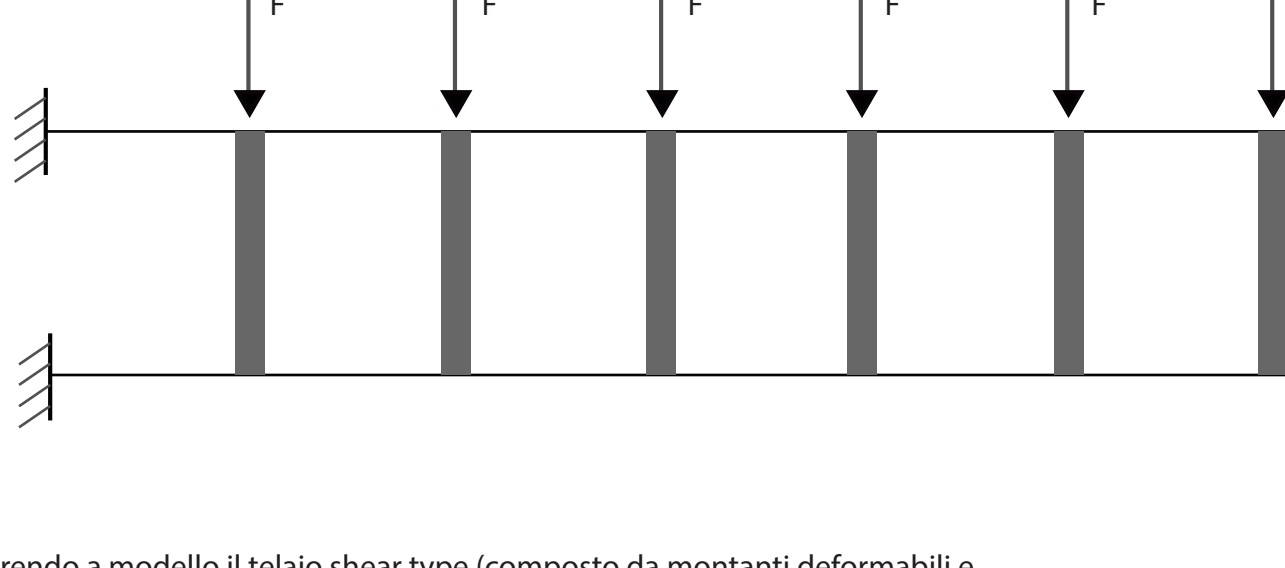


Devo risolvere una struttura a mensola composta da una trave vierendeel sottoposta a carichi puntuali incidenti assialmente sui montanti verticali.



Prendo a modello il telaio shear type (composto da montanti deformabili e correnti infinitamente rigidi, sottoposto all'azione di forze orizzontali). Per determinare la struttura devo trovare i valori del taglio e del momento (trascuriamo lo sforzo assiale).

So che  $T = \frac{12EI}{l^2} \delta$      $M = \frac{6EI}{l^2} \delta$

Analizzo la struttura tratto per tratto, considerando che la forza si ripartisce tra i due correnti in modo uguale e ovviamente avvicinandosi sempre di più ai vincoli, ogni tratto si fa carico delle tensioni dei tratti precedenti.

Correnti orizzontali

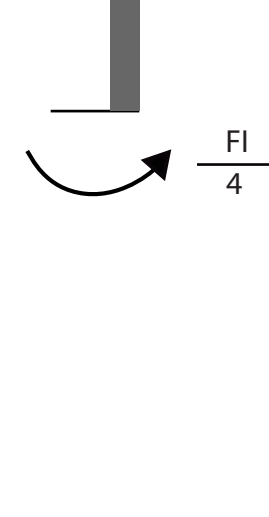
Montanti verticali

**1° Tratto**

$F = 2T > \frac{24EI}{l^3} \delta_1$

$\delta_1 = \frac{Fl^3}{24EI}$

$M = \frac{6EI}{l^2} \frac{Fl^3}{24EI} = \frac{Fl}{4}$

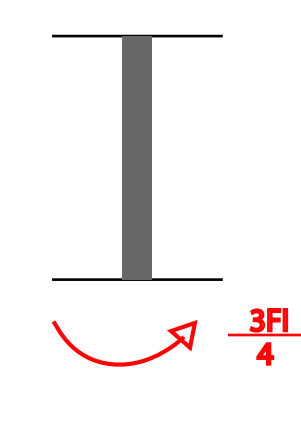
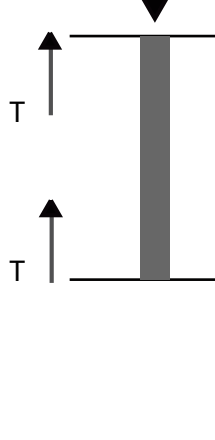


**2° Tratto**

$2F = 2T > \frac{12EI}{l^3} \delta_2$

$\delta_2 = \frac{Fl^3}{12EI}$

$M = \frac{6EI}{l^2} \frac{Fl^3}{12EI} = \frac{Fl}{2}$

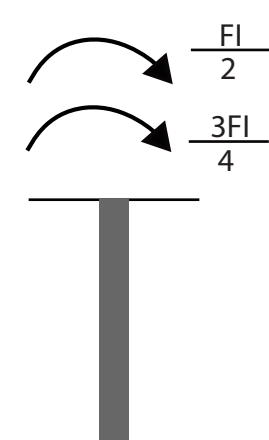
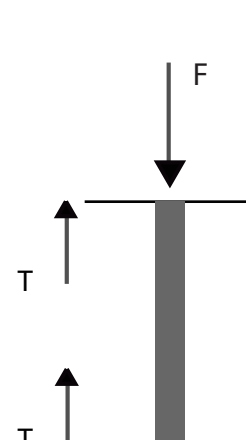


**3° Tratto**

$3F = 2T > \frac{8EI}{l^3} \delta_3$

$\delta_3 = \frac{Fl^3}{8EI}$

$M = \frac{6EI}{l^2} \frac{Fl^3}{8EI} = \frac{3Fl}{4}$

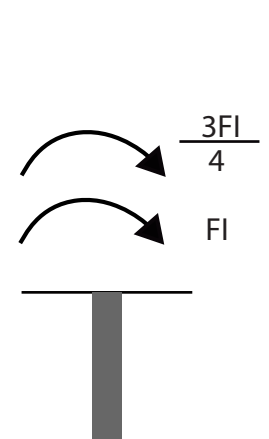
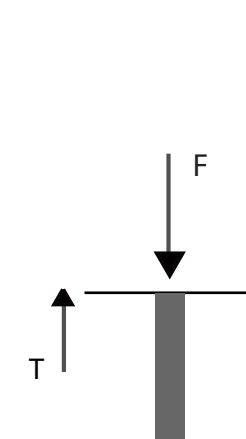


**4° Tratto**

$4F = 2T > \frac{6EI}{l^3} \delta_4$

$\delta_4 = \frac{Fl^3}{6EI}$

$M = \frac{6EI}{l^2} \frac{Fl^3}{6EI} = Fl$

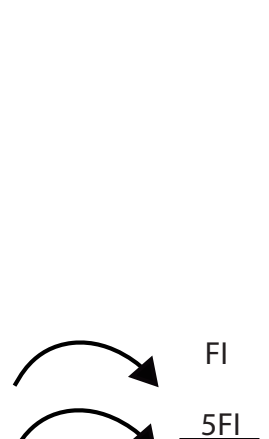


**5° Tratto**

$5F = 2T > \frac{24EI}{5l^3} \delta_5$

$\delta_5 = \frac{5Fl^3}{24EI}$

$M = \frac{6EI}{l^2} \frac{5Fl^3}{24EI} = \frac{5Fl}{4}$

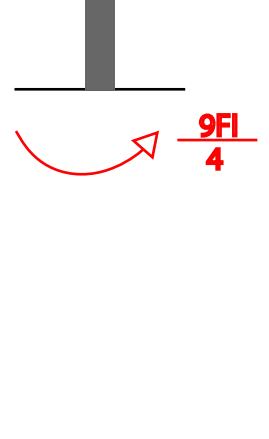
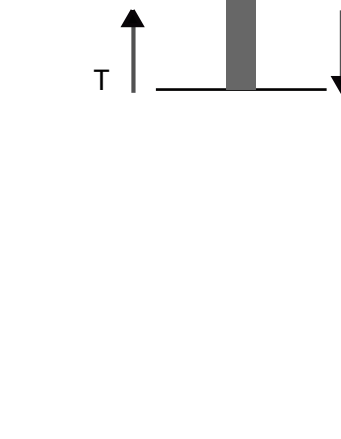


**6° Tratto**

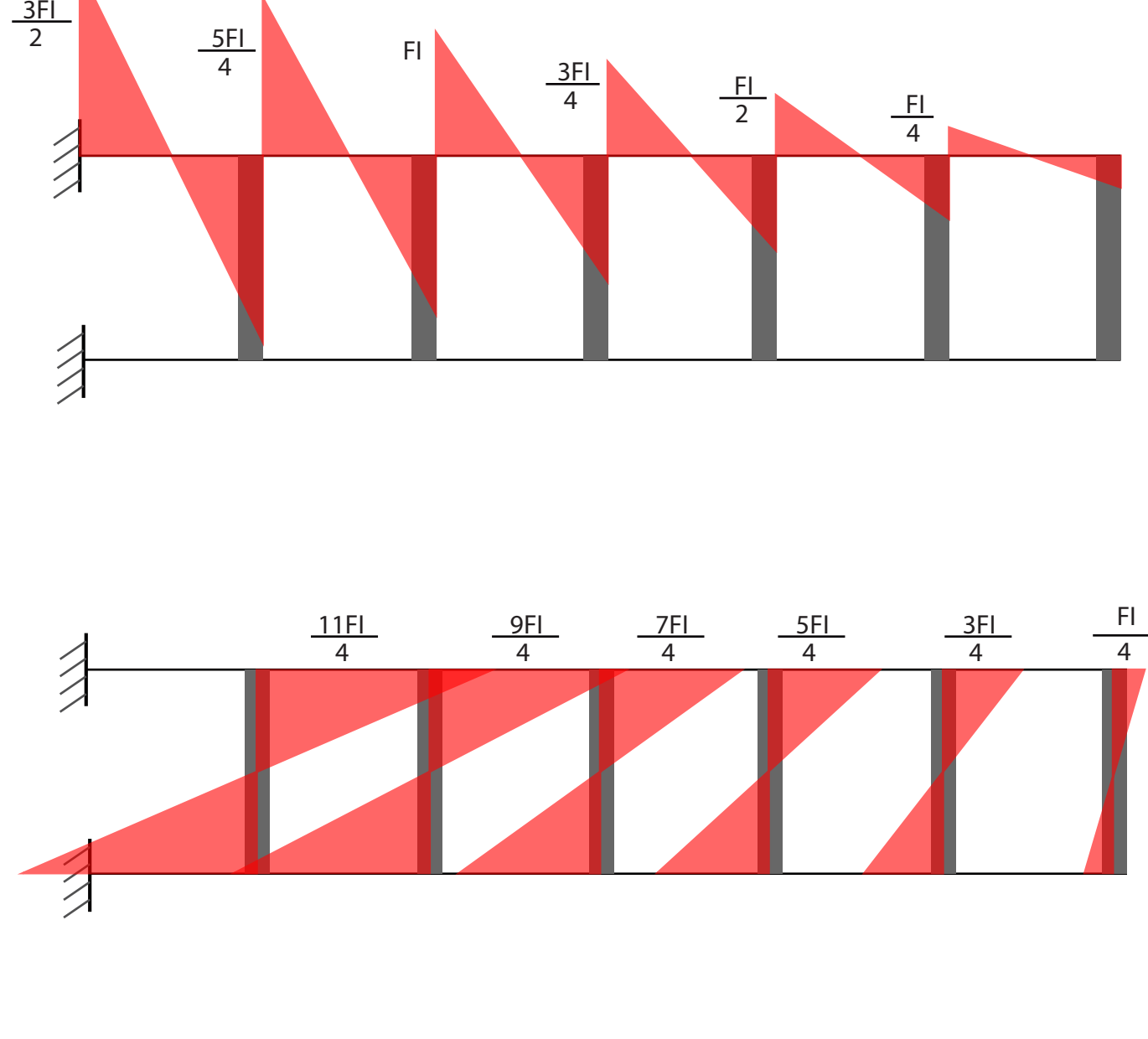
$6F = 2T > \frac{4EI}{l^3} \delta_6$

$\delta_6 = \frac{Fl^3}{4EI}$

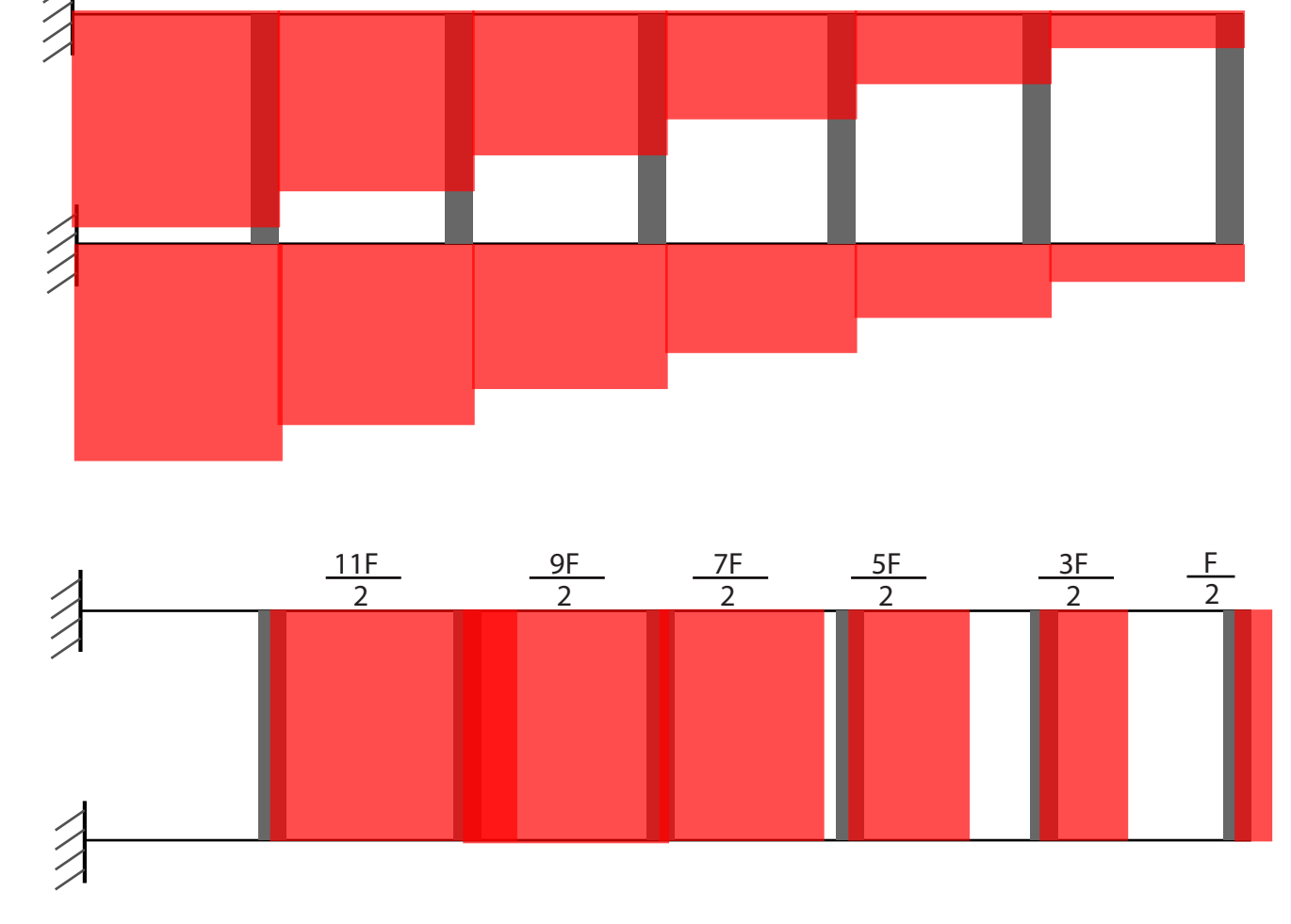
$M = \frac{6EI}{l^2} \frac{Fl^3}{4EI} = \frac{3Fl}{2}$



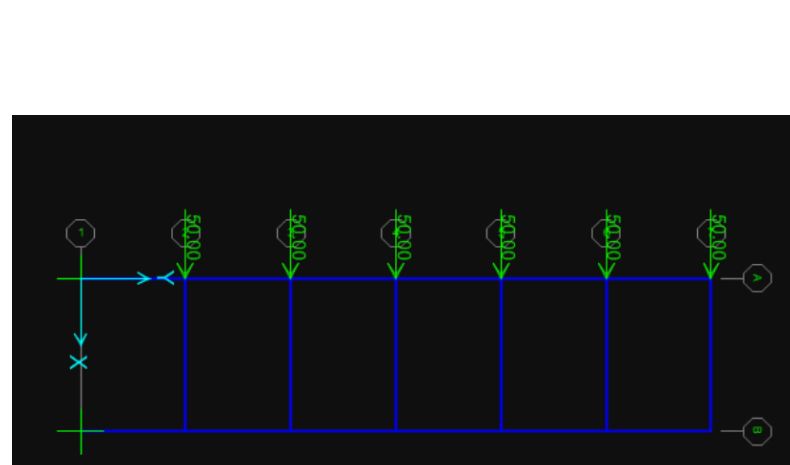
**M** Il momento avrà andamento lineare e avrà uguali valori in entrambi i correnti.



**T** Per trovare i valori del Taglio occorre solo dividere il momento per l/2.



Verifica della deformata e dei diagrammi con SAP:



Deformata

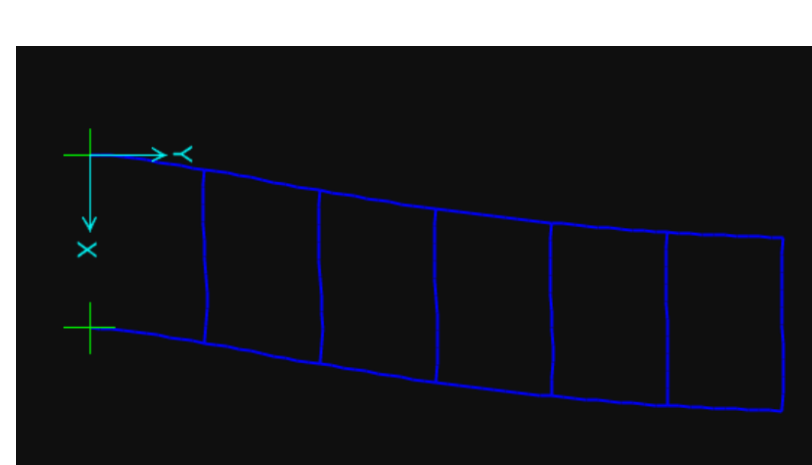


Diagramma dei momenti

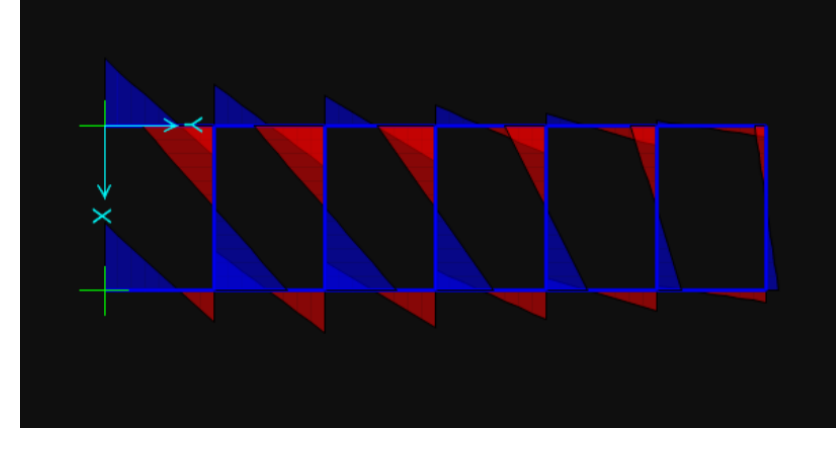


Diagramma dei tagli

