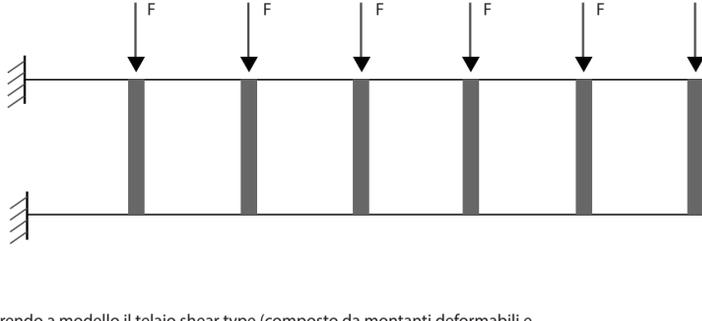


Devo risolvere una struttura a mensola composta da una trave vierendeel sottoposta a carichi puntuali incidenti assialmente sui montanti verticali.



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 avvicinandomi sempre di più ai vincoli, ogni tratto si fa carico delle tensioni dei tratti precedenti.

Correnti orizzontali

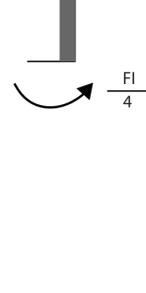
Montanti verticali

**1° Tratto**

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

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

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

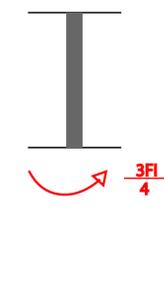
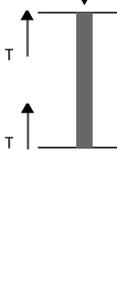


**2° Tratto**

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

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

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

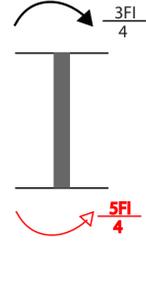
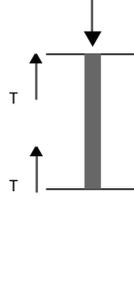


**3° Tratto**

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

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

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

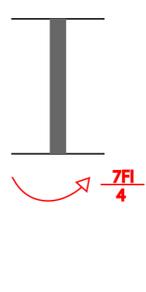
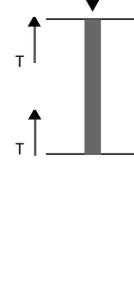


**4° Tratto**

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

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

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

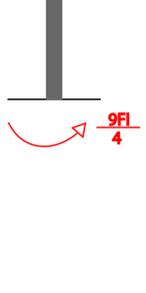
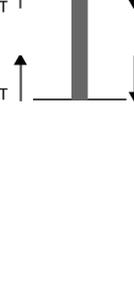


**5° Tratto**

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

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

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

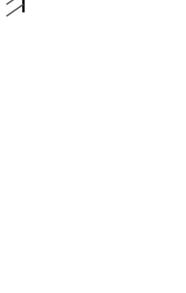


**6° Tratto**

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

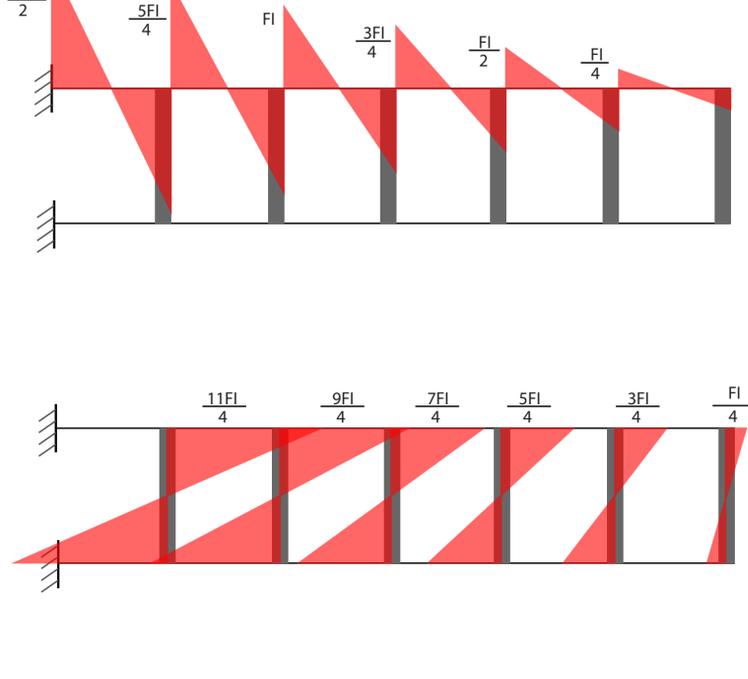
$$\delta_6 = \frac{Fl^3}{4EI}$$

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



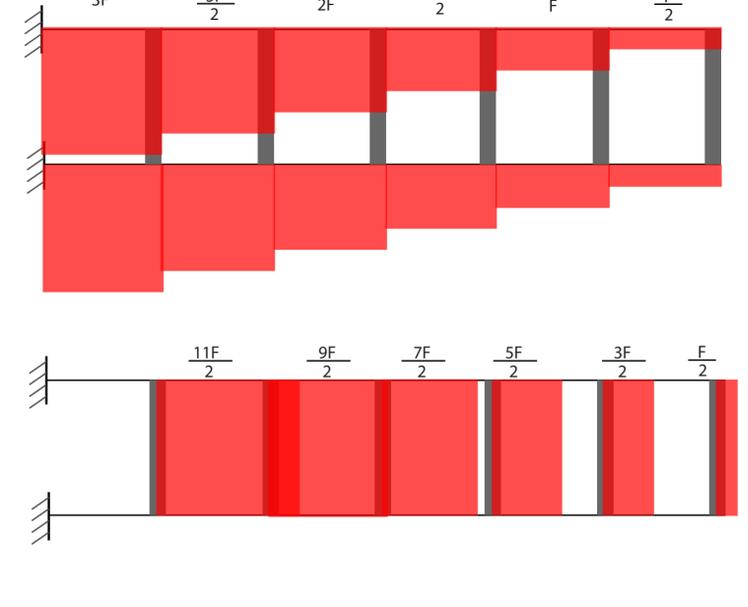
**M**

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

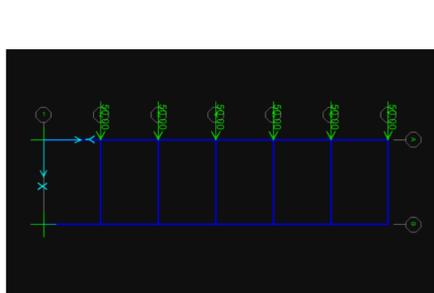


**T**

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



Verifica della deformata e dei diagrammi con SAP:



Deformata

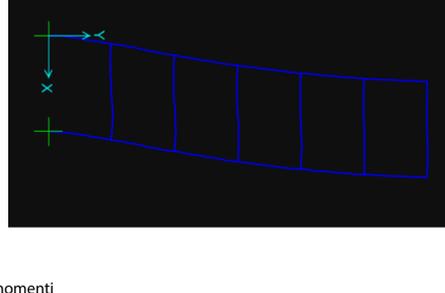


Diagramma dei momenti

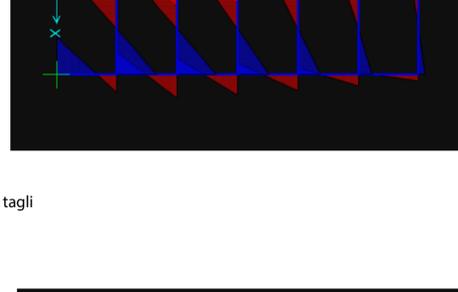


Diagramma dei tagli

