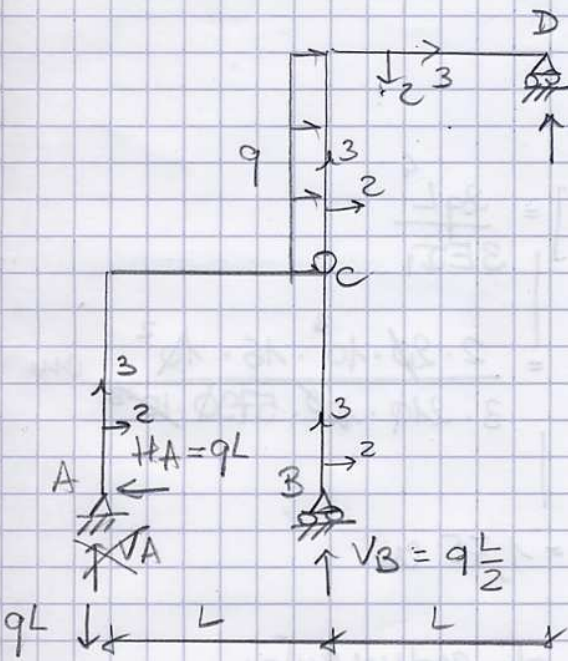


1)

Struttura in acciaio concata in modo antirumore!



$$(\leftarrow) H_A = qL$$

$$(C) \rightarrow V_D = q \frac{L}{2}$$

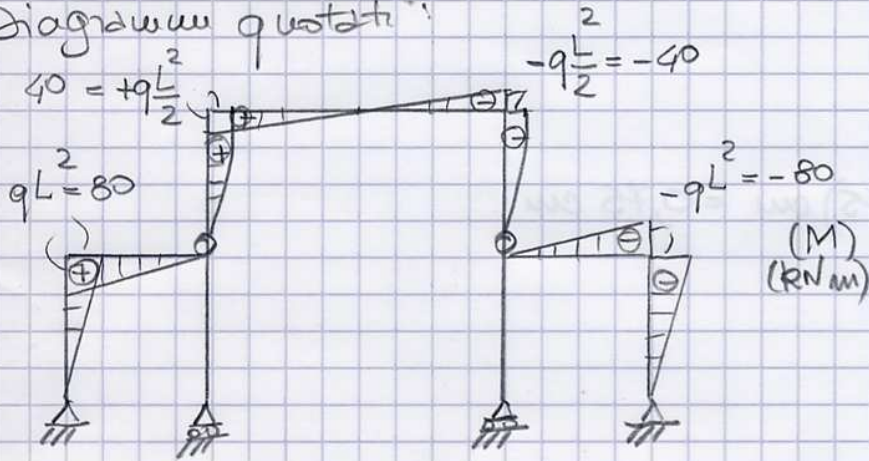
$$(B) \cdot V_A + qL \frac{3}{2} = q \frac{L}{2}$$

$$\rightarrow V_A = -qL$$

$$(\uparrow) V_B = -V_A - V_D = qL - q \frac{L}{2} = q \frac{L}{2}$$

La struttura è staticamente determinata per le particolari condizioni di carico (antirumore).

Diagrammi quotati:

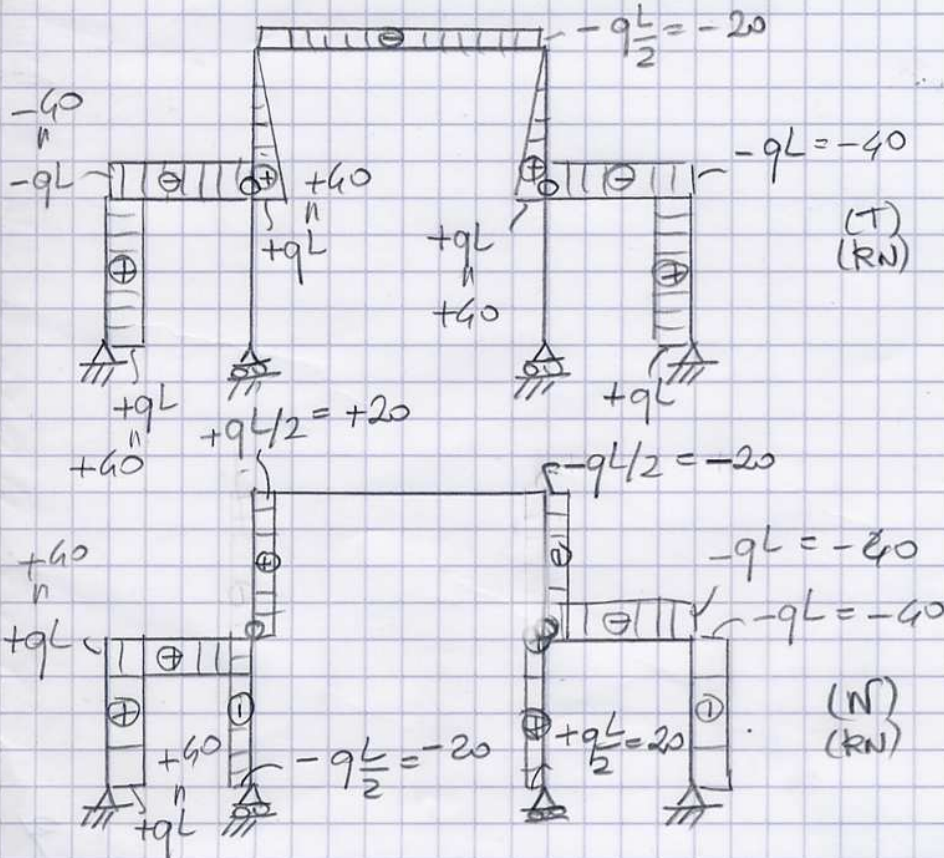


Progetto:

$$W_1 \geq \frac{M_{max}}{\sigma_{amm}} = \frac{80 \cdot 10^3}{320 \cdot 10^6} \text{ m}^3$$

$$= \frac{10^3}{3} \text{ cm}^3$$

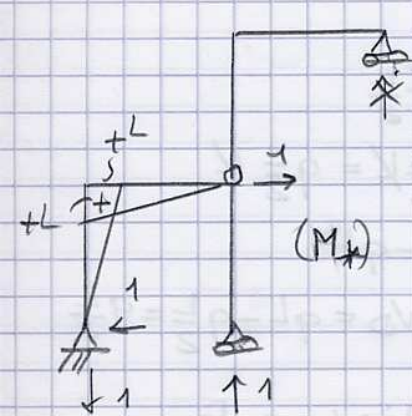
$$= 333 \text{ cm}^3$$



\rightarrow IPE 270

$$\begin{cases} W_1 = 428,9 \text{ cm}^3 \\ I_1 = 5790 \text{ cm}^4 \\ A = 45,95 \text{ cm}^2 \\ H = 270 \text{ mm} \end{cases}$$

Spostamento orizzontale di C:



$$1 \cdot \delta_c = \frac{1}{EI_1} \int_0^L M M^* dx_3$$

$$= \frac{q}{EI_1} \left[\frac{1}{3} L L q L^2 \right] = \frac{2qL^4}{3EI_1}$$

$$= \frac{2 \cdot 20 \cdot 10^3 \cdot 16 \cdot 10^2}{3 \cdot 210 \cdot 10^8 \cdot 5790 \cdot 10^8} \text{ cm}$$

$$= 1,75 \text{ cm}$$

Spostamento orizzontale di C in presenza di cedimento:

$$1 \cdot \delta_c + 1 \cdot \delta = \frac{2qL^4}{3EI_1}$$

$$\rightarrow \delta_c = (-1 + 1,75) \text{ cm} = 0,75 \text{ cm}$$