MOMENTO FLETTENTE

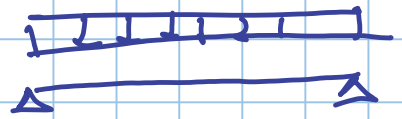
Titolo nota 14/11/2017

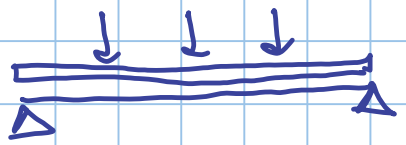
SLU

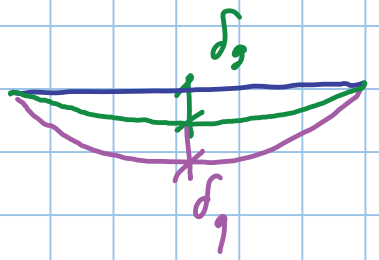
verifica di resistenza

$$M_{Ed} \leq M_{Rd}$$

SLE







freccia dovuta a g

freccia dovuta a q

$$\delta_{max} = \delta_g + \delta_q$$

STATO LIMITE DI ESERCIZIO

controllare δ_{max}

δ_2

solaio praticabile con tramezzi:

Elementi strutturali	Limiti superiori per gli spostamenti verticali	
	$\frac{\delta_{max}}{L}$	$\frac{\delta_2}{L}$
Coperture in generale	$\frac{1}{200}$	$\frac{1}{250}$
Coperture praticabili	$\frac{1}{250}$	$\frac{1}{300}$
Solai in generale	$\frac{1}{250}$	$\frac{1}{300}$
Solai o coperture che reggono intonaco o altro materiale di finitura fragile o tramezzi non flessibili	$\frac{1}{250}$	$\frac{1}{350}$
Solai che supportano colonne	$\frac{1}{400}$	$\frac{1}{500}$
Nei casi in cui lo spostamento può compromettere l'aspetto dell'edificio	$\frac{1}{250}$	
In caso di specifiche esigenze tecniche e/o funzionali tali limiti devono essere opportunamente ridotti.		

$$\delta_{max} \leq \frac{1}{250} L$$

$$\delta_2 \leq \frac{1}{350} L$$

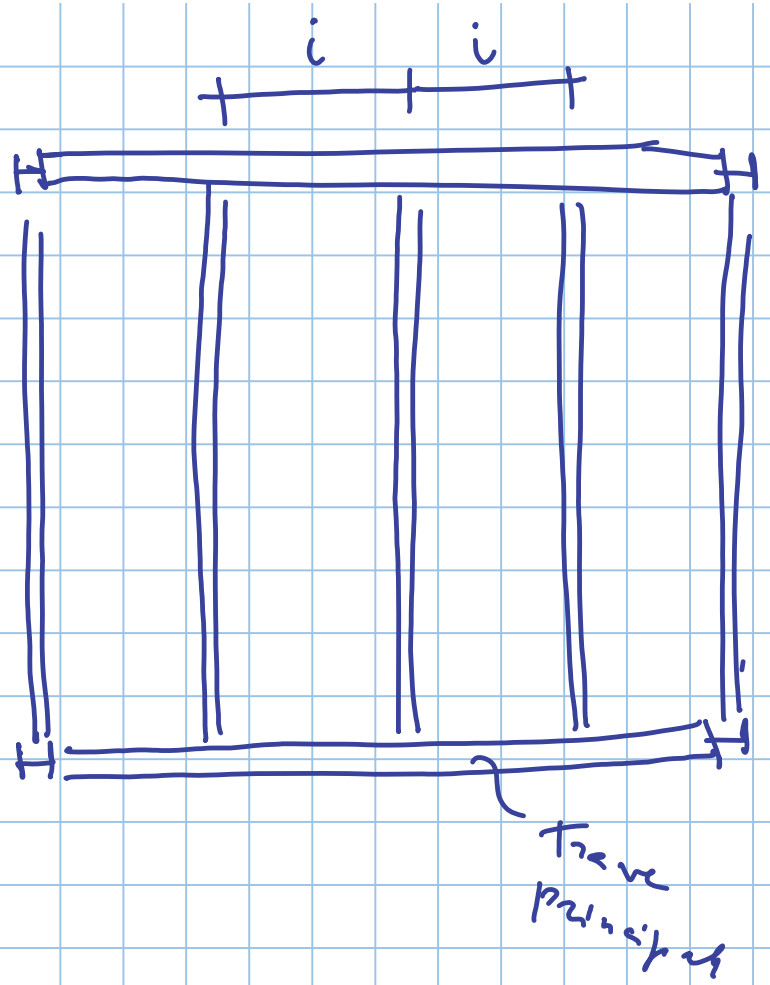
TRAVE SECONDARIA

$g_{1K} = 3.6 \ KU/m^2$

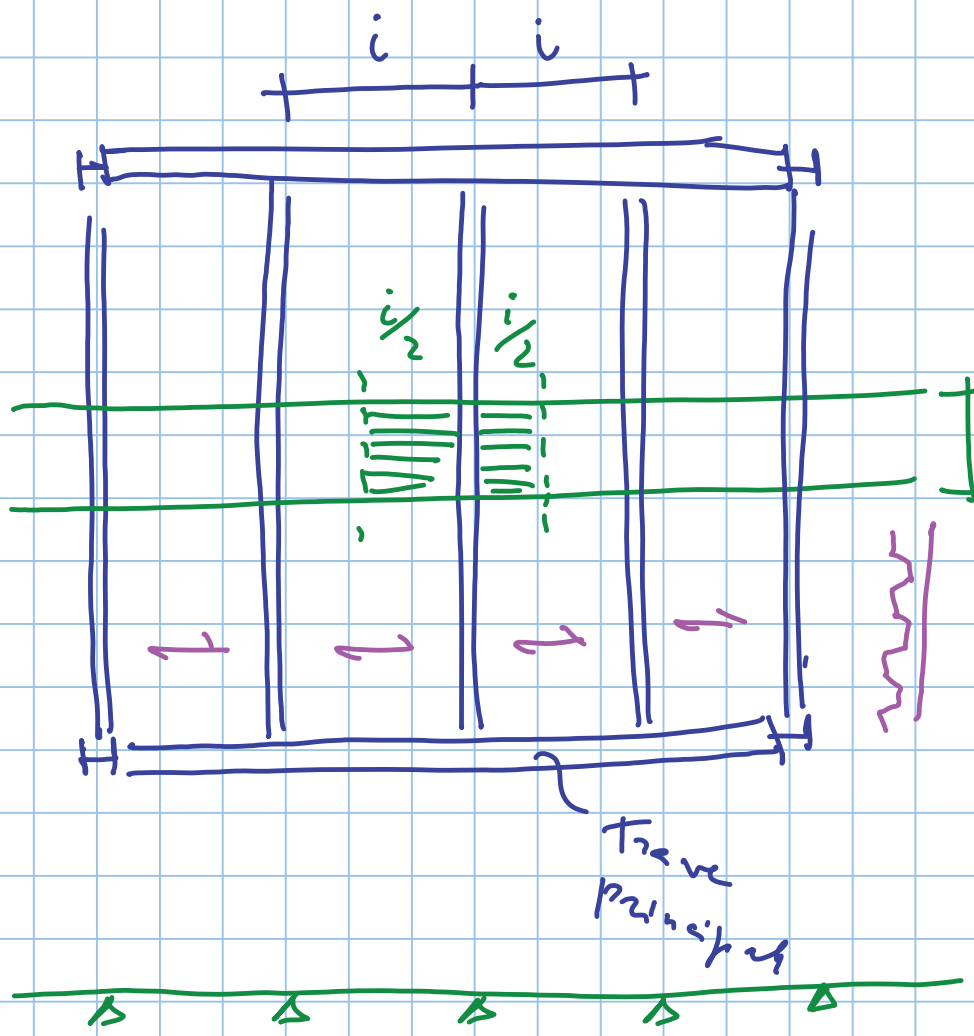
$g_{2K} = 1.2 \ KN/m^2$

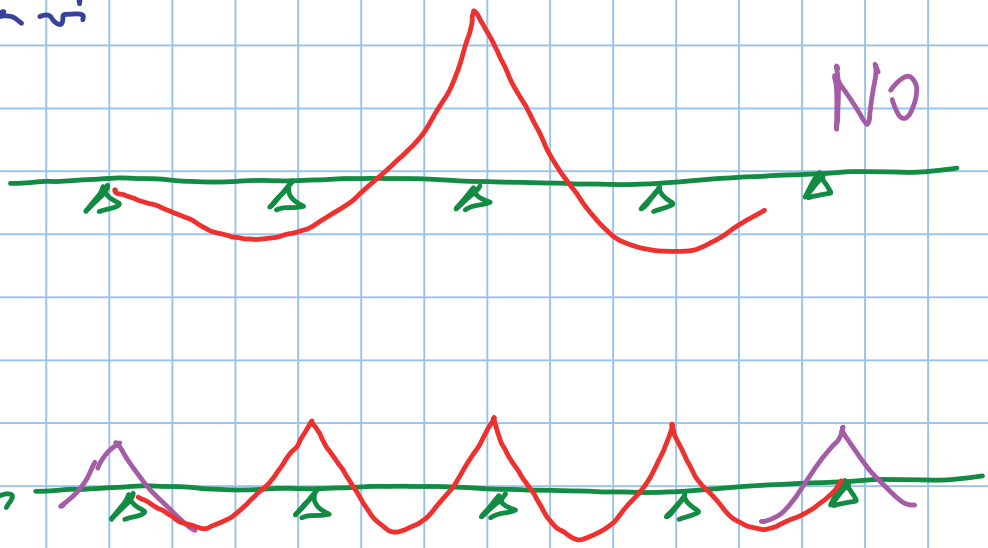
$q_K = 3.00 \ KN/m^2$

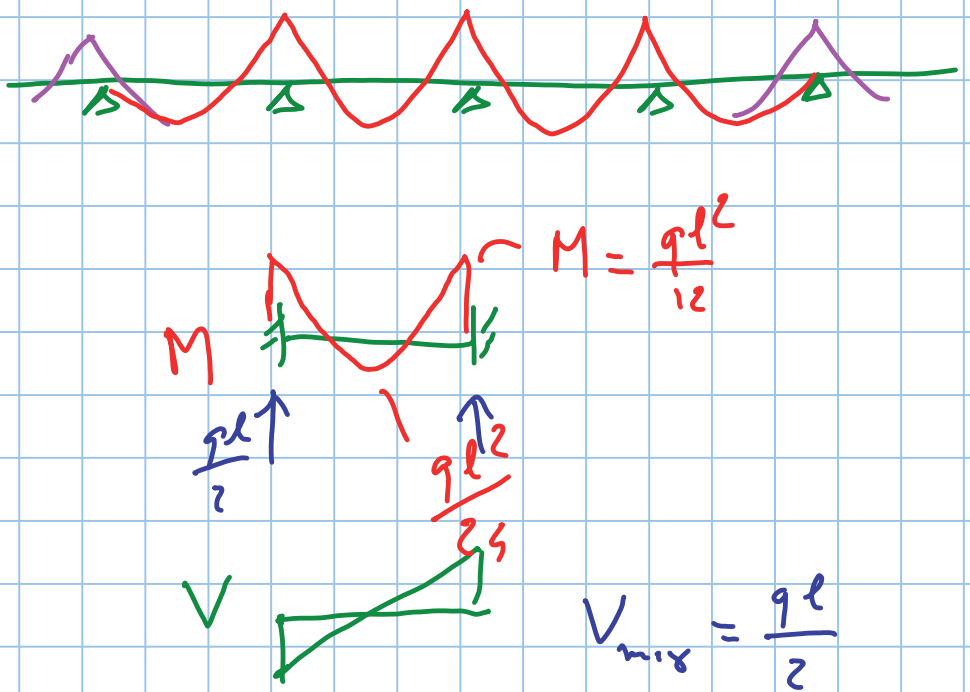
$i = 1.60 \ m$

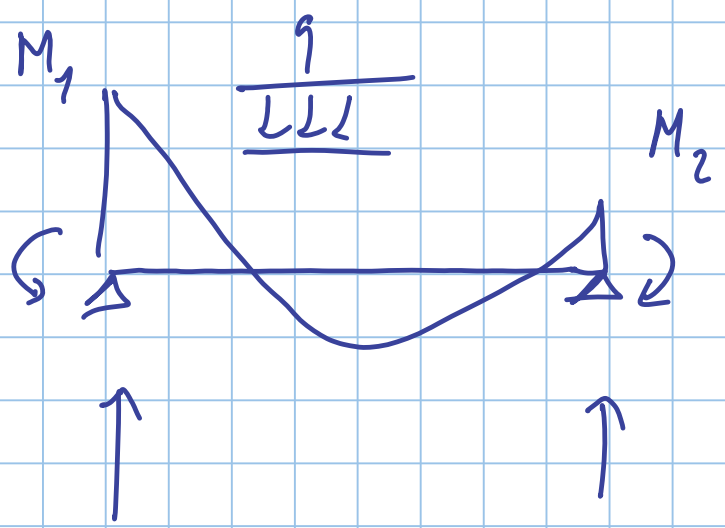


Analisi dei carichi sulle Travi









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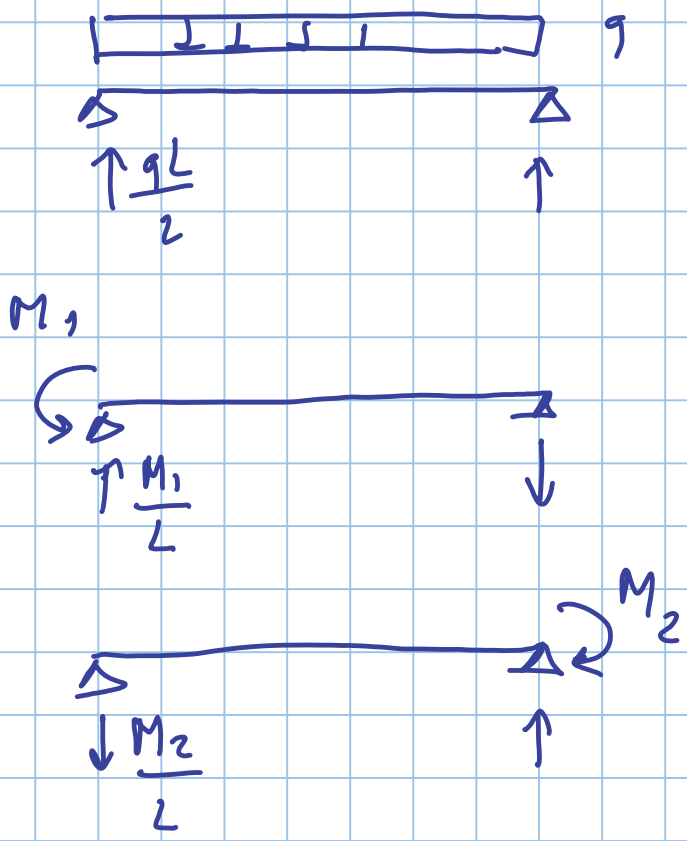


$$V = \alpha \frac{qL}{2}$$

con α = 1 1.1 1.2

$$V = \frac{qL}{2} + \frac{M_1 - M_2}{L}$$

carichi sulla Trave secondaria interna

tipo di carico	sviluppo	g_k	q_k
soletta (p.p. + sovrac.)	$\frac{1.60}{2} + \frac{1.60}{2}$	$= 3.6 \times 1.6$	
		5.76	
incid. Tramezzi	" "		$= 1.2 \times 1.6$
			1.92
carico variabile			$= 3 \times 1.6$
			4.80
peso Trave secondaria		0.50	
		6.26	6.72

$g_k = 6.26$ kN/m

$g_k + q_k = 12,98$ kN/m

$$\delta_{max} = \frac{5}{384} \frac{(g_k + q_k) L^4}{EI} \leq \frac{1}{250} L \quad (= \delta_{lim})$$

g_k

$$\frac{1}{350}$$

$L = 7.00\ m$

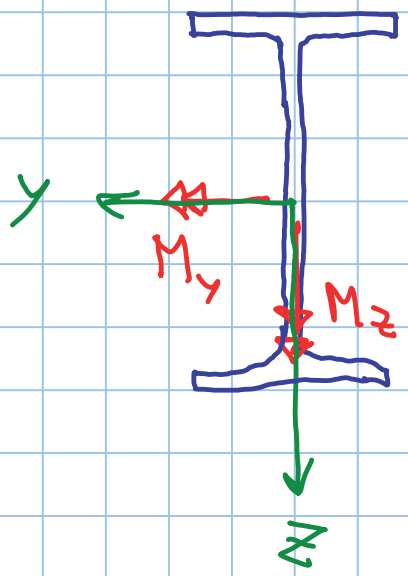
$$\frac{5 \times 250}{384} \frac{(g_k + q_k) L^3}{E} \leq I$$

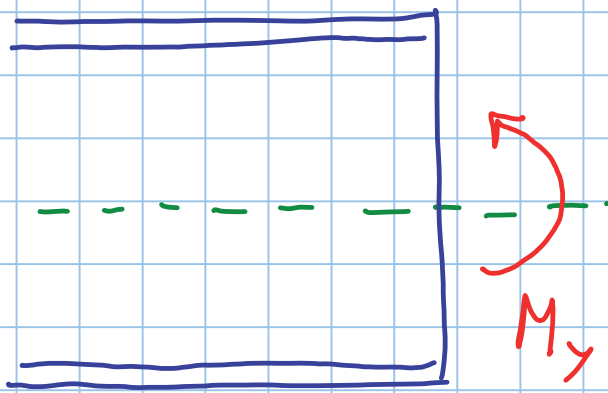
$$\frac{5 \times 250}{384} \frac{12.98 \times 7^3 \times 10^4}{210\,000}\ mm^4 = 6901 \times 10^4\ mm^4$$

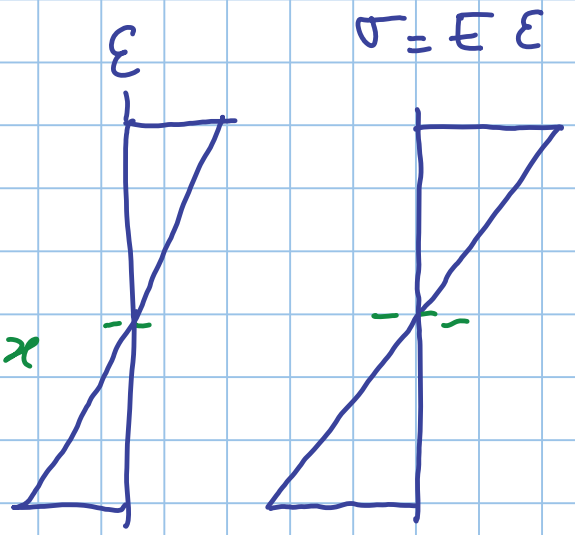
$\times 10^4\ mm^4$

IPE 300 $I_y = 8356 \times 10^4\ mm^4$

FLESSIONE SEMPLICE







$$\varepsilon(y,z) = \varepsilon_G + \frac{\partial \varepsilon}{\partial y} y + \frac{\partial \varepsilon}{\partial z} z$$

in presenza di M_y

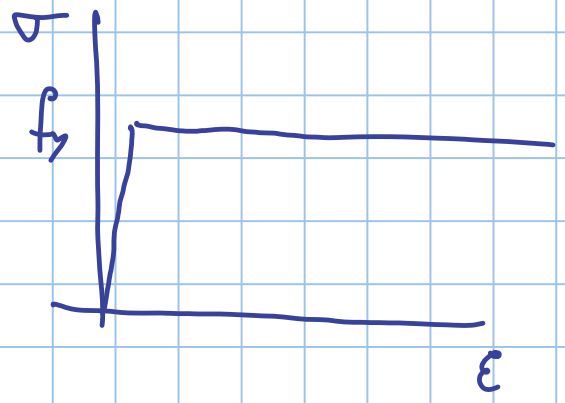
$$N = \int \sigma_x \, dA \qquad M_y = \int \sigma_x \, z \, dA \qquad M_z = -\int \sigma_x \, y \, dA$$

$$\sigma = \frac{N}{A} + \frac{M_y}{I_y} z - \frac{M_z}{I_z} y$$

NAVIER

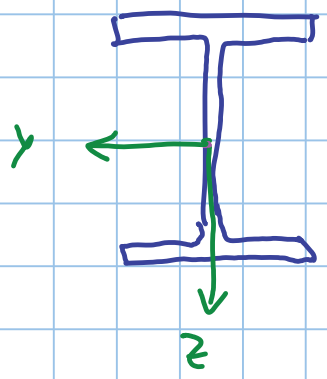
vale per elasticità lineare

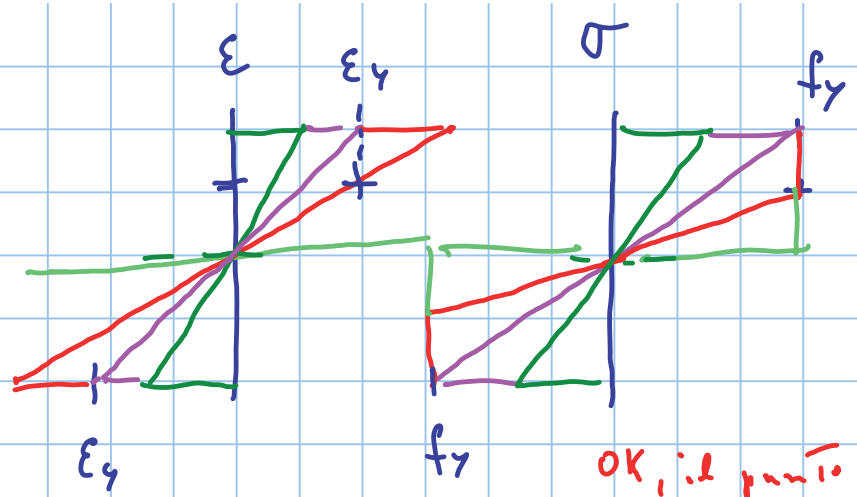
per SLU



relazione σ-ε NON lineare

vale sempre l'Hp di mantenimento sezione piana

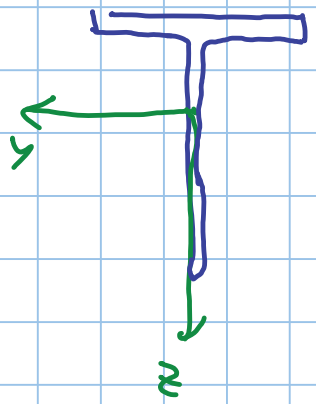


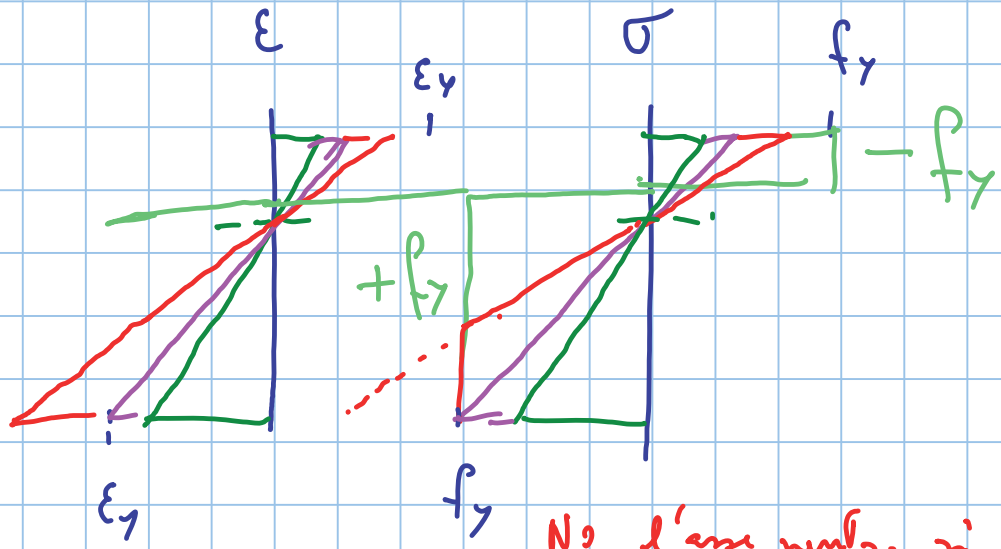


per $\frac{1}{2} \to \infty$

il diagramma di σ è costante a Tratti

OK, il punto di nulla non cambia





L'area Tesa deve essere uguale all'area compressa

No, l'asse neutro si sposta verso l'alto