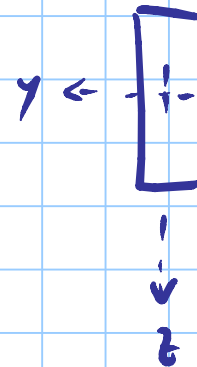


$$l = 2.00 \text{ m}$$

2 UPN 120

S 275

1 UPN 120



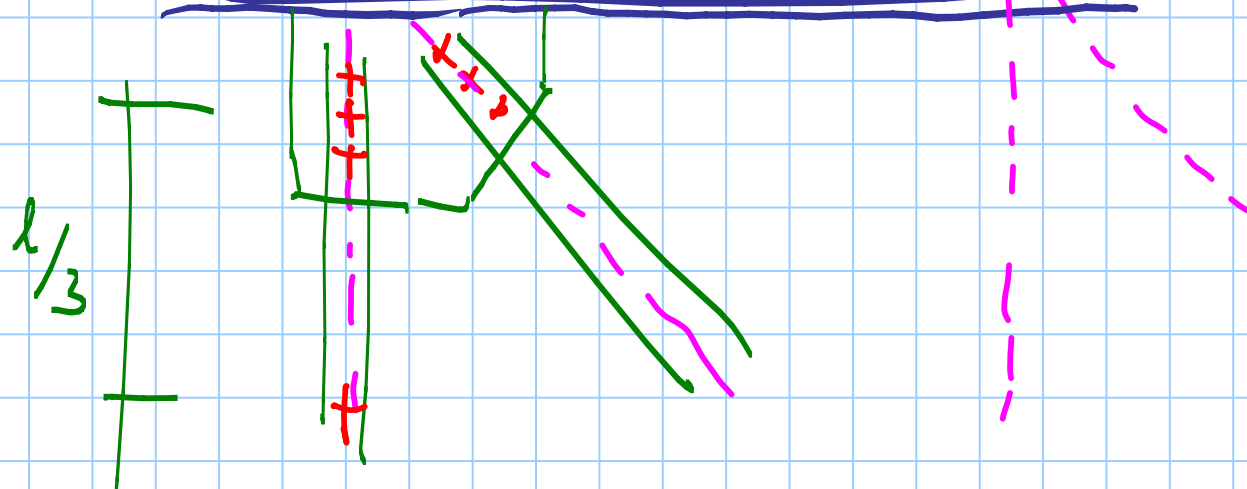
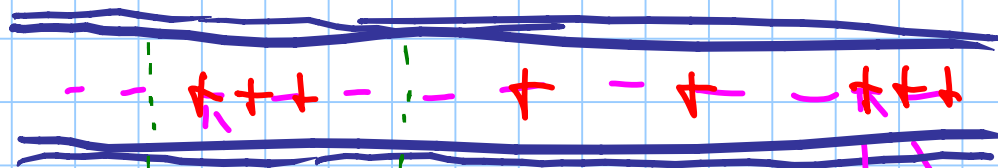
$$A = 17.0 \text{ cm}^2$$

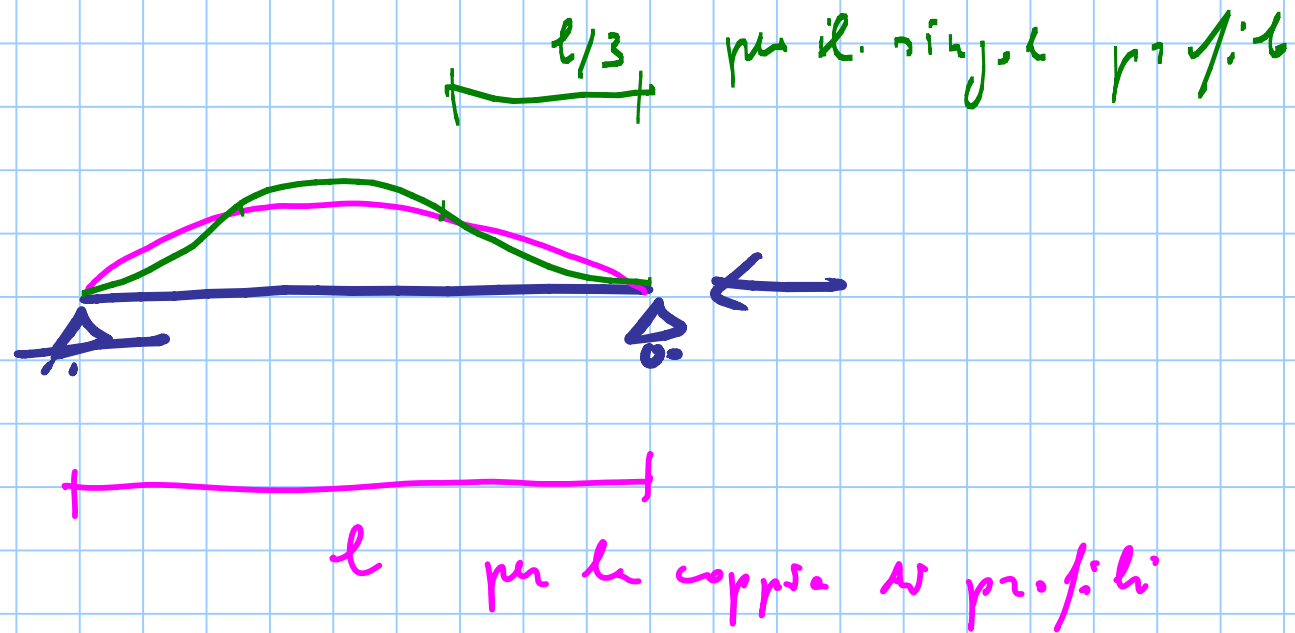
$$I_y = 364 \text{ cm}^4$$

$$i_y = 4.62 \text{ cm}$$

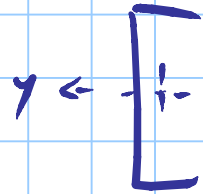
$$I_z = 43.2 \text{ cm}^4$$

$$i_z = 1.59 \text{ cm}$$





1 UPN 120



H

$$y_s = 1.60 \text{ cm}$$

$$A = 17.0 \text{ cm}^2$$

$$I_y = 364 \text{ cm}^4$$

$$i_y = 4.62 \text{ cm}$$

$$I_z = 43.2 \text{ cm}^4$$

$$i_z = 1.59 \text{ cm}$$

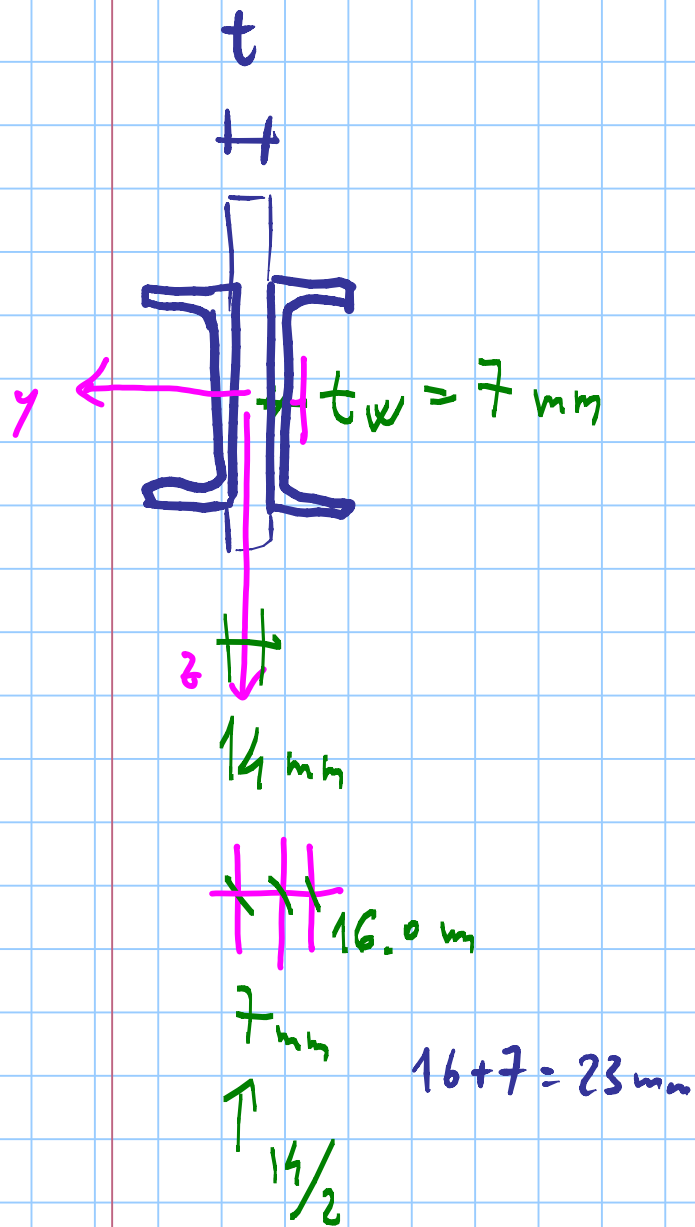
$$l_o = 2.00 \text{ m}$$

$$\lambda_{\max} = \frac{2000}{15.9} = 125.8$$

$\uparrow$   
 $i_{\min}$

$$l_o = \frac{2.00}{3} = 0.667 \text{ m}$$

$$\lambda_{\max} = \frac{667}{15.9} = 41.9$$



2 UPN 120

$$l_0 = 2.00 \text{ m}$$

$$A = 2 \times 17.0 \text{ cm}^2 = 34.0 \text{ cm}^2$$

$$I_y = 2 \times 364 \text{ cm}^4$$

$$i_y = 4.62 \text{ cm}$$

$$I_x = 2 \times \left[ 43.2 + 17.0 \times 2.3^2 \right] = 266.2 \text{ cm}^4$$

133.1

$$i_x = \sqrt{\frac{266.2}{34.0}} = 2.80 \text{ cm}$$

$$\lambda = \frac{2000}{28.0} = 71.4$$

$$\lambda_{1ry} = 41.9$$

$$\lambda_{2ry} = 71.4$$

$$\lambda_{eq} = \sqrt{\lambda_{1r.}^2 + \lambda_{2r.}^2} = \sqrt{41.9^2 + 71.4^2} = 82.8$$

$$\bar{\lambda} = \frac{\lambda}{\lambda_1} = \frac{82.8}{86.0} = 0.963$$

curve C

$$\Rightarrow \chi = 0.56$$

$$N_{b.R1} = \chi A \frac{f_y}{\gamma_{m1}} = \frac{0.56 \times 34.0}{1.0} \times \frac{275}{1.05} = 498.7 \text{ kN}$$

# FLESSIONE

— SLU

resistenza

— SLE

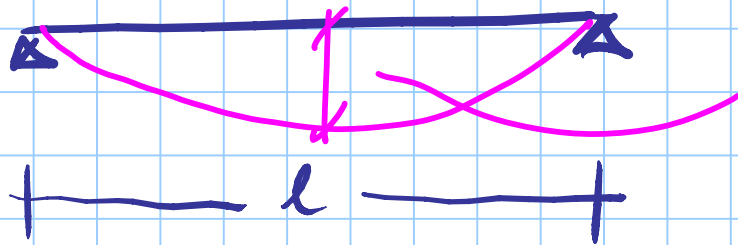
deformazioni

calcolo della freccia

SLE, cond. 2me



$$q_k + q_k$$



$$\frac{5}{384} \frac{q l^4}{EI}$$

limiti per  $\left\{ \begin{array}{l} \text{carico Totale} \\ \text{solo carico variabile} \end{array} \right.$



Elementi strutturali	Limiti superiori per gli spostamenti verticali	
	$\frac{\delta_{max}}{L}$	$\frac{\delta_z}{L}$
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	$\frac{1}{250}$	
<i>In caso di specifiche esigenze tecniche e/o funzionali tali limiti devono essere opportunamente ridotti.</i>		

crit. t. Val

$$f = \frac{5}{384} \frac{(g+1)l^4}{EI} \leq \frac{1}{200} l$$

$$I \geq \frac{5 \times 200}{384} \frac{(g+1)l^3}{E}$$

crit. variable

$$f = \frac{5}{384} \frac{gl^4}{EI} \leq \frac{1}{250} l$$

$$I \geq \frac{5 \times 250}{384} \frac{gl^3}{E}$$

de l'ordine 7/11

carico sulla trave secondaria

[KN/m]

correzione  
p. pannelli molto vicini

dal pannello

peso proprio  
→ TIma

$$\frac{q_n}{q_n + q_h} \approx 0.82 > \frac{4}{5}$$

$q_d$

~~0.34~~ 0.32

0.39

~~1.33~~ 0.71



$q_h$

0.55

$q_d$

3.83

---

3.83



$q_h$

2.55

$q_d + q_h$

4.77

---

5.16

$q_d + q_h$

3.10

$$I \geq \frac{5 \times 250}{384} \frac{q l^3}{E} = \frac{5 \times 250 \times 2.55 \times 6.00^3}{384 \times 206000} \times 10^9 \times 10^{-4}$$

$$= 870.4 \text{ cm}^4$$

se  $I$  e' eccedente

