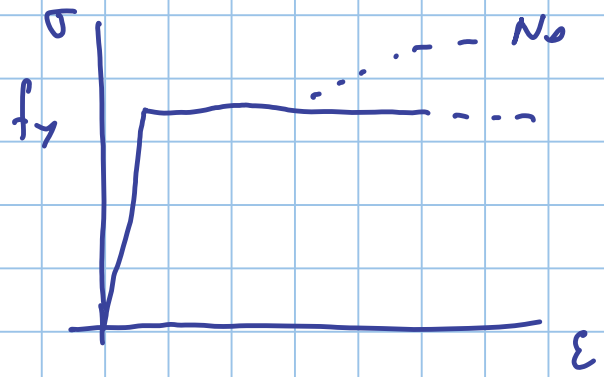
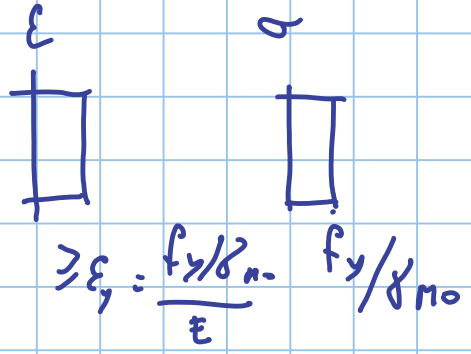
Titolo nota

29/10/2019



$N_{pl,Rd}$

$$N_{Rd} = A \frac{f_y}{\gamma_{M0}}$$



SLU

$$N_{Ed} \leq N_{Rd}$$

$$N_{Ed} \leq A \frac{f_y}{\gamma_{M0}} \Rightarrow A \geq \frac{N_{Ed}}{f_y/\gamma_{M0}} = \frac{N_{Ed}\,\gamma_{M0}}{f_y}$$

$N_{EK} = 477$ KN con valori caratteristici

dovuto al vento "caratteristico"

della forza F_K

per verifiche SLU valori di calcolo

vento = carico variabile q_k

$F_d = \gamma_q \cdot F_k$

$N_{Ed} = \gamma_q N_{EK}$

$q_d = \gamma_q q_k$

$\gamma_q \rightarrow 1{,}5$

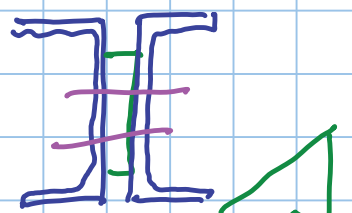
$N_{ED} = 477 \times 1.5 = 715.5$ KN

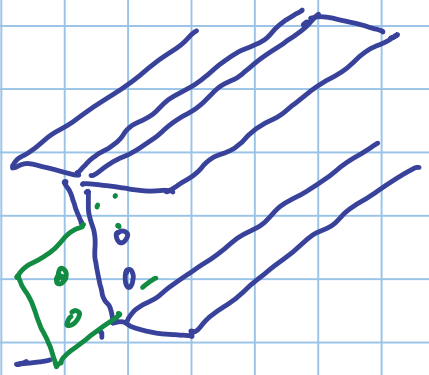
$$A \geq \frac{N_{Ed}\ \gamma_{M0}}{f_{yk}} = \frac{715.5 \times 10^3 \times 1.05}{275 \times 10^6} \times 10^6 = 2732\ mm^2$$

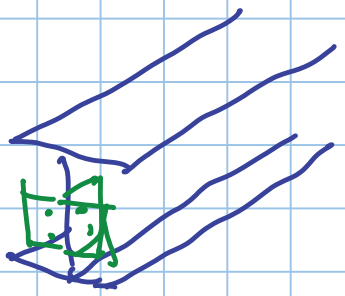
$$= 27.32 \times 10^2\ mm^2$$

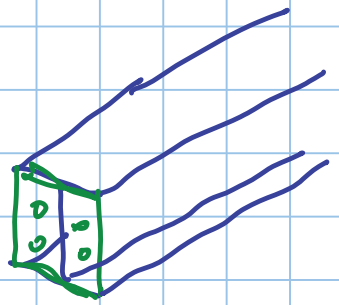
acciaio S275

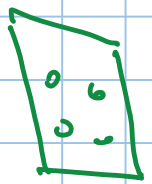
COME COLLEGARLO ?



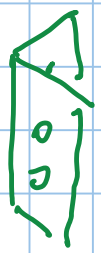








PIATTO

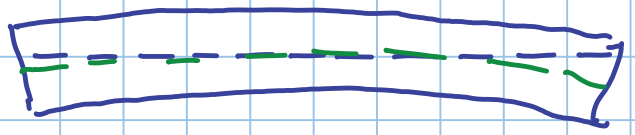


ANGOLARE

IMPERFEZIONI

- GEOMETRICHE

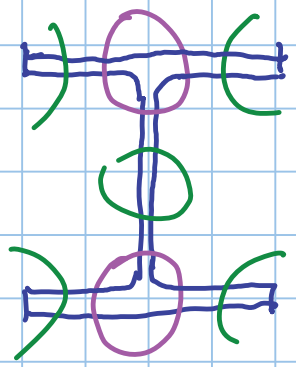
  asse non rettilineo



- MECCANICHE

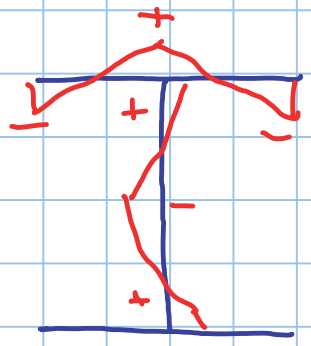
  raffreddamento → tensioni autoequilibrate
  autotensioni

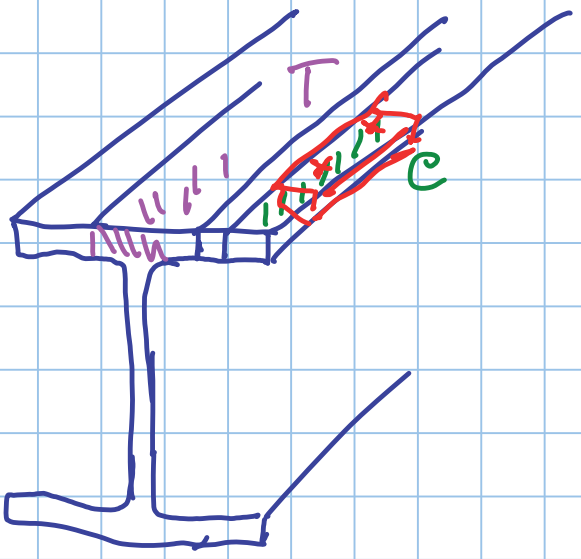
  tensioni residue

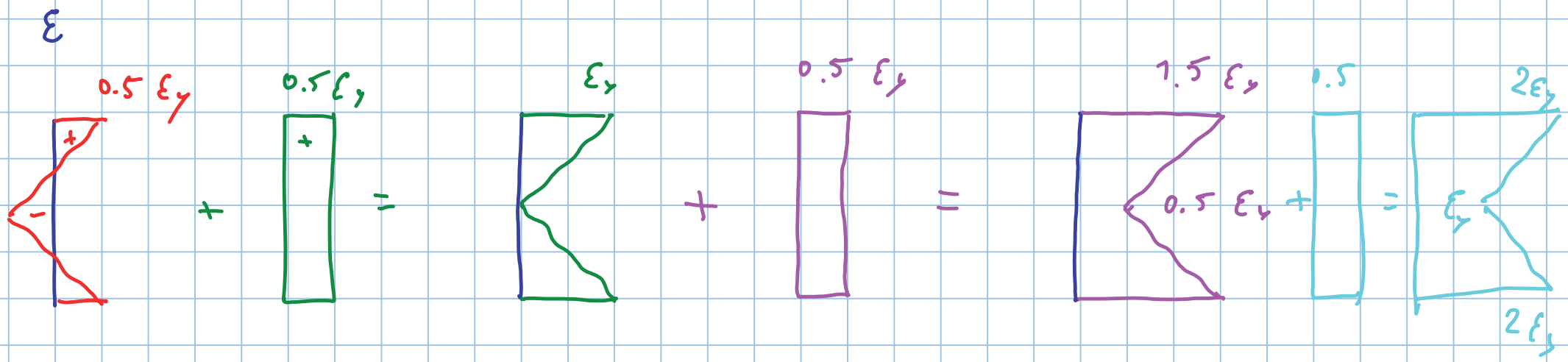


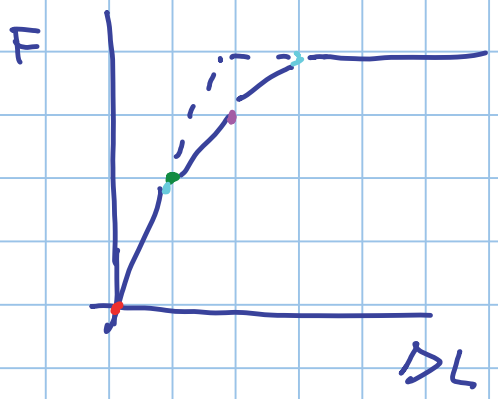
zone che
si raffreddano
prima

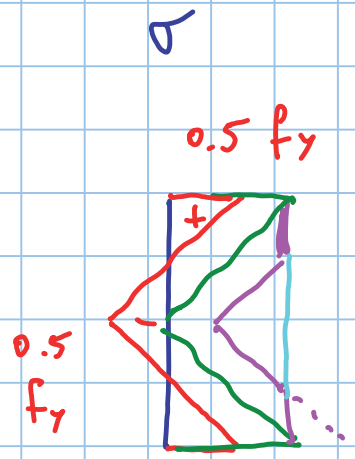
zone che
si raffreddano
dopo





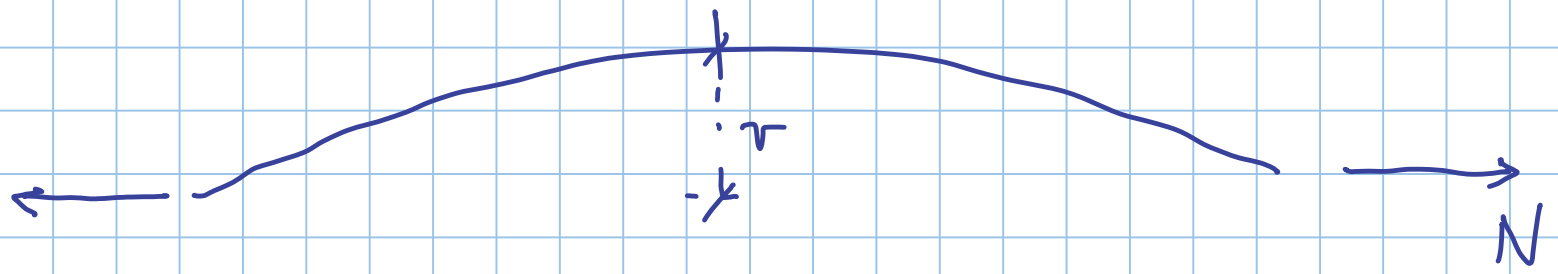


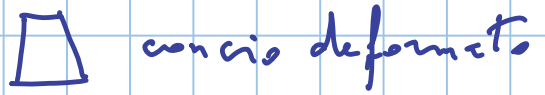


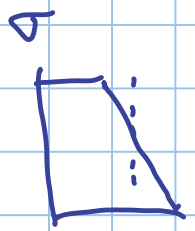


$$N = A\, f_y$$

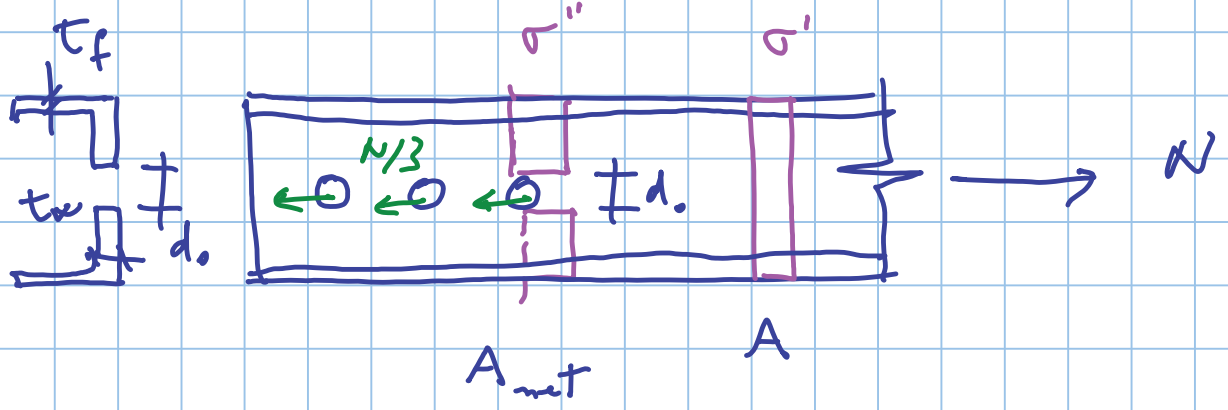
$M = N r$







$$A_{net} = A - d_0 \, t_w$$



$$\sigma'' = \frac{N}{A_{net}} \qquad \sigma' = \frac{N}{A}$$

$$\sigma'' > \sigma'$$

$$N_{Rd}^{net} = A_{net} \frac{f_y}{\gamma_{M0}}$$

Si osserva

$$\sigma = \frac{N_{Rd}^{net}}{A} = \frac{A_{net}}{A} \frac{f_y}{\gamma_{M0}} < \frac{f_y}{\gamma_{M0}}$$

campo elastico

resistenza ultima, in corrispondenza del for-

$$N_{u,Rd} = 0.9\, A_{net}\, \frac{f_u}{\gamma_{M2}}$$

$\gamma_{M2} \rightarrow 1.25$

$$\frac{20.65 \times 10^2 \times 275}{1.05} \times 10^{-3} =$$

$$= 540.8 \text{ KN}$$

S275

UPE 160

$t_f = 19$ mm

$t_w = 5.5$ mm

$A = 21.7 \times 10^2$ mm²

$$A_{net} = 21.7 \times 10^2 - 19 \times 5.5 = 20.65 \times 10^2 \text{ mm}^2$$

$$N_{pl,Rd} = \frac{21.7 \times 10^2 \times 275}{1.05} \times 10^{-3}$$

$$= 568.3 \text{ kN}$$

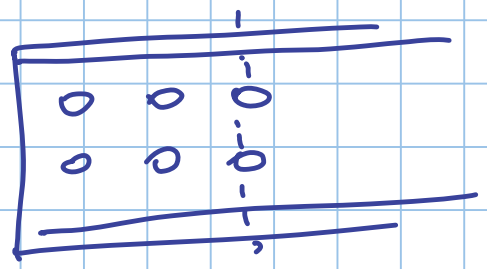
$$N_{u,Rd} = \frac{0.9 \times 20.65 \times 10^2 \times 430 \times 10^{-3}}{1.25}$$

$$= 639.3 \text{ kN}$$

È importante che $N_{u,Rd} > N_{pl,Rd}$

comportamento duttile

o $N_{u,Rd} < N_{pl,Rd}$ comportamento fragile (da evitare)



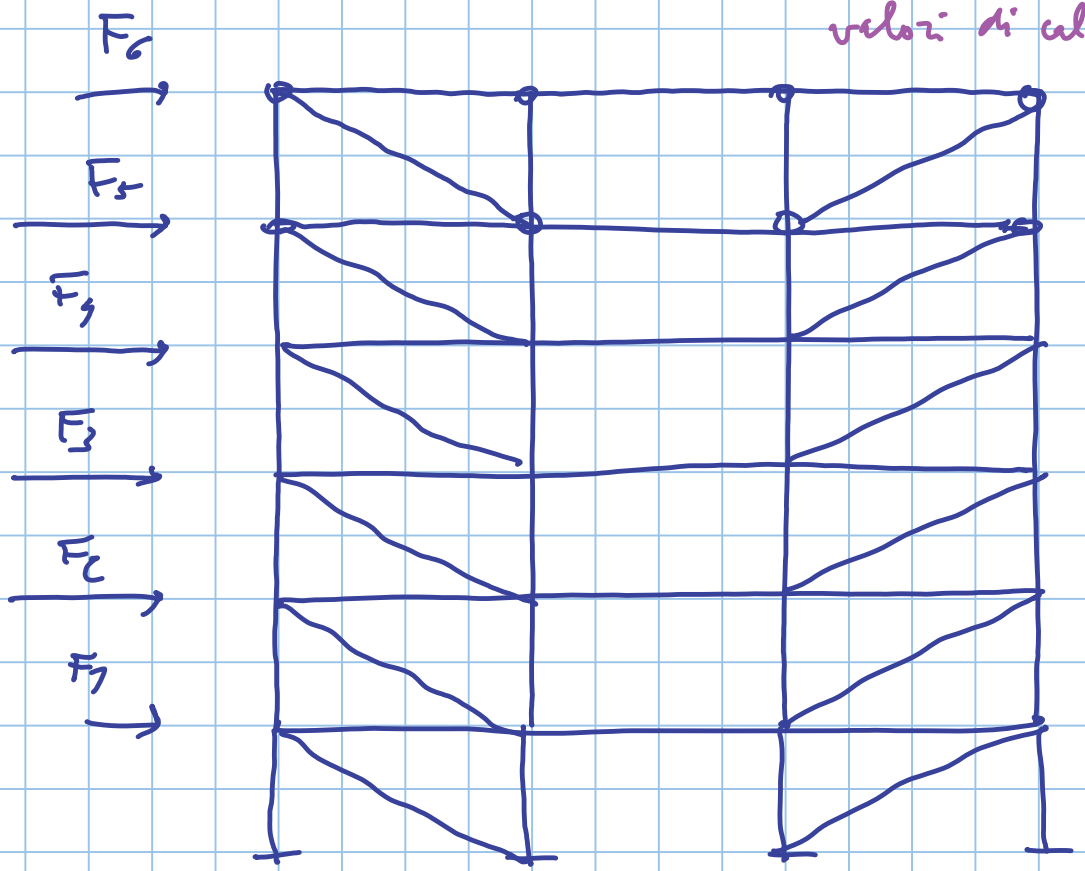
$$0.9\, A_{net} \frac{f_u}{\gamma_{M2}} > A \frac{f_y}{\gamma_{M0}}$$

S275

$$\frac{A_{net}}{A} > \frac{f_y/\gamma_{M0}}{0.9\, f_u/\gamma_{M2}} = \frac{275/1.05}{0.9 \times 430/1.25} = 0.846$$

VERIFICA SLU

valori di calcolo



VERIFICA SLE

valori caratteristici