Flessione semplice

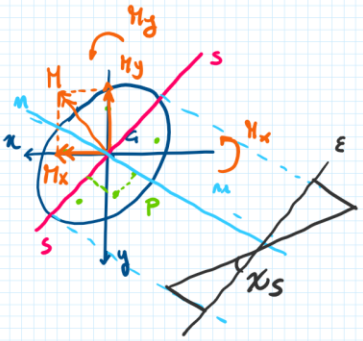
giovedì 28 marzo 2024 09:54

I) $\sigma_{ct} \leq f_{cfk}$

II) $\sigma_c \leq 0.6\, f_{ck}$, $\sigma_s \leq 0.8\, f_{yk}$ } CAR. COMB. RARA — $\sigma_c \leq 0.45\, f_{ck}$ } CAR. COMB. QUASI PERM.

III) $M_{Rd} \geq M_{Ed}$

I STADIO



S = asse di sollecitazione

S ⊥ vettore M

$\sigma = E\varepsilon$

$\sigma = \frac{N}{A} + \frac{M_x}{I_x} y - \frac{M_y}{I_y} x$

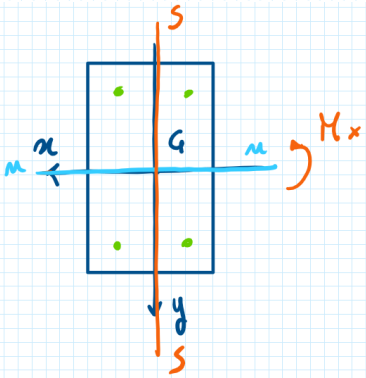
$\varepsilon = \frac{M_x}{EI_x} y - \frac{M_y}{EI_y} x$

$\chi_y = \frac{\partial \varepsilon}{\partial y}$ $\chi_x = \frac{\partial \varepsilon}{\partial x}$

ASSE NEUTRO n È BARICENTRICO

P (n, s)

SIST. DI RIFERIMENTO (n, s) $\Rightarrow \sigma = E\varepsilon$, $\varepsilon = \chi_s s$ $\Rightarrow \sigma = E\chi_s s$

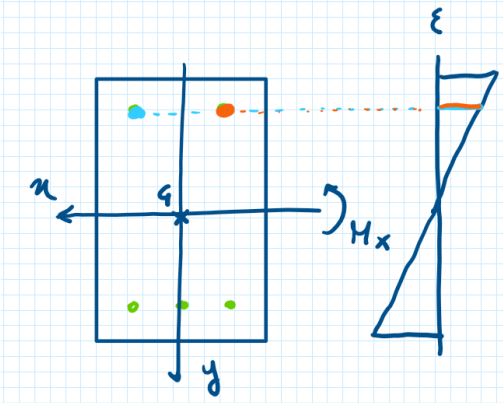


$\sigma = E\varepsilon$

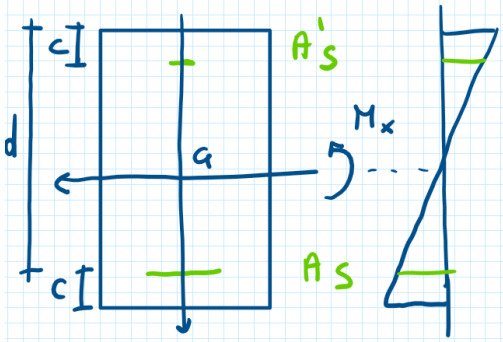
$\sigma = \frac{M_x}{I_x} y$

asse neutro $\rightarrow \sigma = 0$

$\frac{M_x}{I_x} y = 0 \Rightarrow // \vec{x}$



G = banc. della sez. omog.

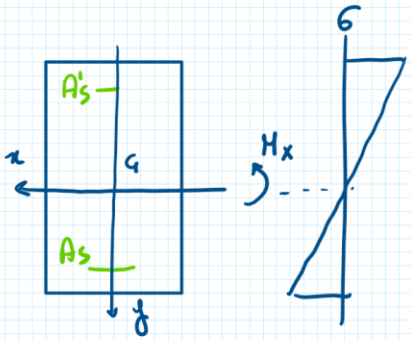


A'_s = arm. compressa

A_s = arm. tesa

d = altezza utile : h - c

Verifica a fessurazione



$$\sigma_{ct} \leq f_{cfk}$$

$$\sigma_c = \frac{M_x}{I_x} y$$

I_x, y → Riferiti alla sez. omog.

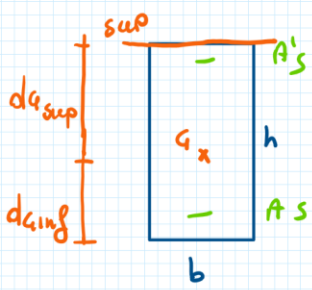
PROCEDIMENTO

1) Determinare G della sez. omog.

2) I_x, y

3) $\sigma_{ct} \leq f_{cfk}$

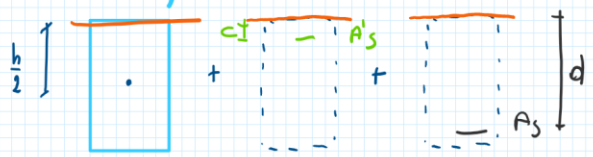
1) Determinare G



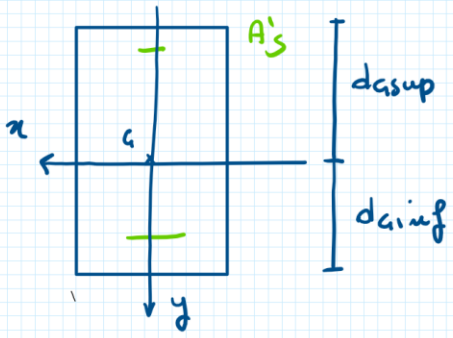
$$d_{Gsup} = \frac{S_{sup}}{A_{ci}} \qquad A_{ci} = bh + n(A'_S + A_S)$$

$$d_{Ginf} = h - d_{Gsup}$$

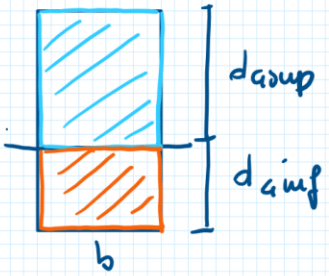
$$S_{sup} = bh\left(\frac{h}{2}\right) + nA'_S c + nA_S d$$

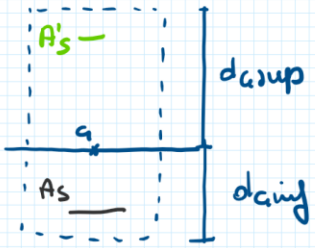


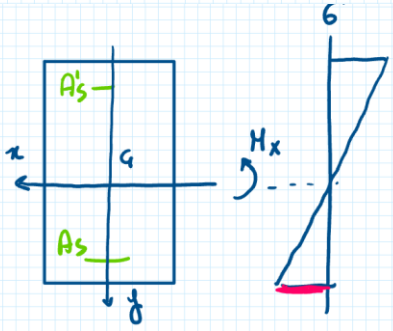
2) Determinare I_x, y



$$I_x = b\frac{d_{Gsup}^3}{3} + b\frac{d_{Ginf}^3}{3} + nA'_S(d_{Gsup} - c)^2 + nA_S(d_{Ginf} - c)^2$$







$y = d_{Ginf}$ ⇒ fibra più tesa di cls

3) $\sigma_{cb} = \frac{M_x}{I_x} y \leq f_c f_k$