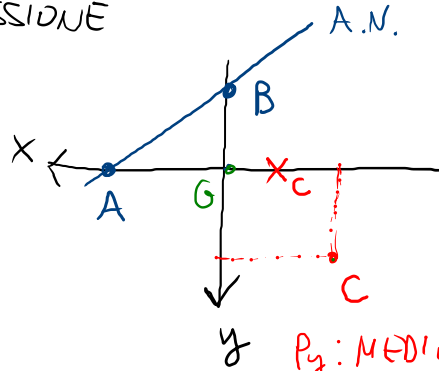


.... PROSEGUIAMO CON LA TENSIO-FLESSIONE

25/11/22

$$\sigma_{zz} = \frac{N}{A} + \frac{M_x}{J_x} y - \frac{M_y}{J_y} x \quad : \text{TENS. NORMAL.}$$



$$A = (x_A, 0)$$

$$B = (0, y_B)$$

$$0 = 1 + \frac{y_c y}{p_y^2} + \frac{x_c x}{p_x^2} \quad : \text{EQ. ASSE NEUTRO}$$

$$\rightarrow x_A? \quad 0 = 1 + \frac{x_c x_A}{p_y^2} \quad : \quad -p_y^2 = x_c x_A \Rightarrow$$

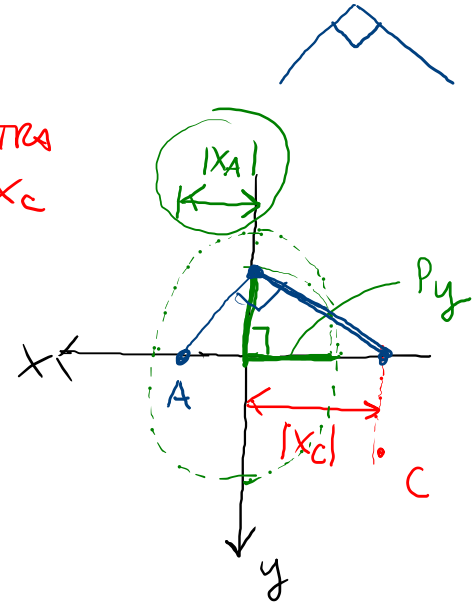
$$p_y: \text{MEDIO PROP. TRA } x_A, x_c$$

$$\frac{|x_A|}{p_y} = \frac{p_y}{|x_c|}$$

$$\rightarrow y_B? \quad 0 = 1 + \frac{y_c y_B}{p_x^2} \quad : \quad -p_x^2 = y_c y_B \Rightarrow$$

$$\frac{|y_B|}{p_x} = \frac{p_x}{|y_c|}$$

$$p_x = \sqrt{\frac{J_x}{A}} \quad ; \quad p_y = \sqrt{\frac{J_y}{A}}$$



ES . IPE 200

$$N = -50 \text{ kN}$$

$$M = 25 \text{ kNm}$$

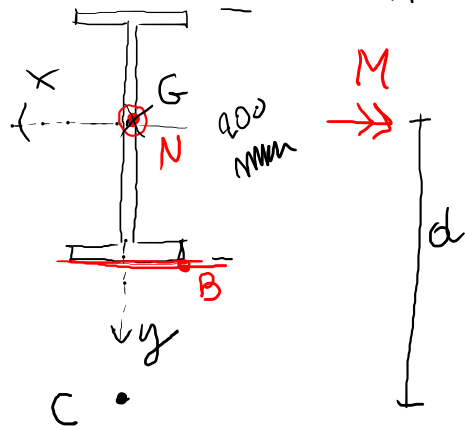
C ?

$$|\sigma_{zz}|^{\text{max}} ?$$

$$\{M_y = 0\}$$

$$J_x = 19430000 \text{ mm}^4$$

$$A = 2848 \text{ mm}^2$$

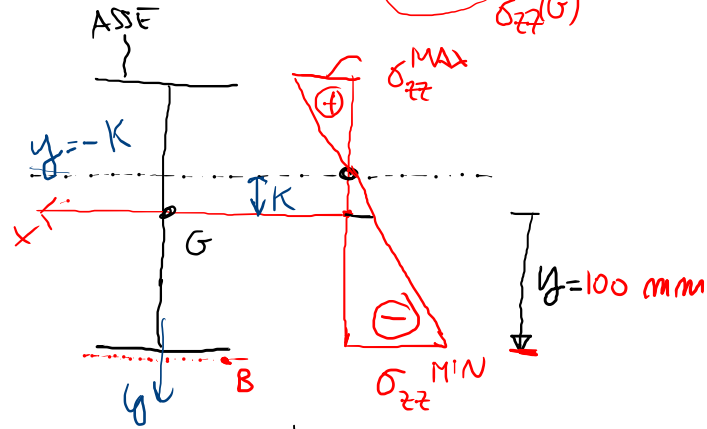


$$d = \frac{M}{|N|} = \frac{25}{50} = 0.5 \text{ m} = 500 \text{ mm}$$

A.N. ?
$$\sigma = -\frac{50000}{2848} + \frac{-25000000}{19430000} y$$

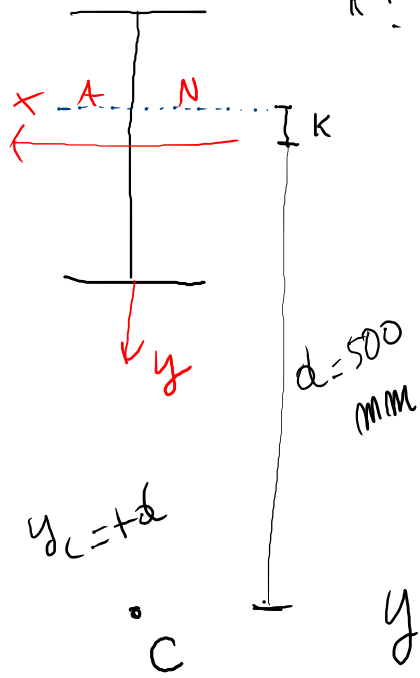
$$y \neq 0 ; y = -K$$

$$\sigma_{zz} = \frac{N}{A} + \frac{M_x}{J_x} y = \frac{-50000}{2848} + \frac{-25000000}{19430000} y$$



$$|\sigma_{zz}|^{\text{max}} = |\sigma_{zz}^{\text{min}}| = \left| -\frac{50000}{2848} + \frac{-25000000}{19430000} (+100) \right|$$

$$= 146 \frac{\text{N}}{\text{mm}^2}$$



K?

$$1 + \frac{y_c}{\rho_x^2} y + \frac{x}{\rho_y^2} x = 0$$

EQ. D.N.

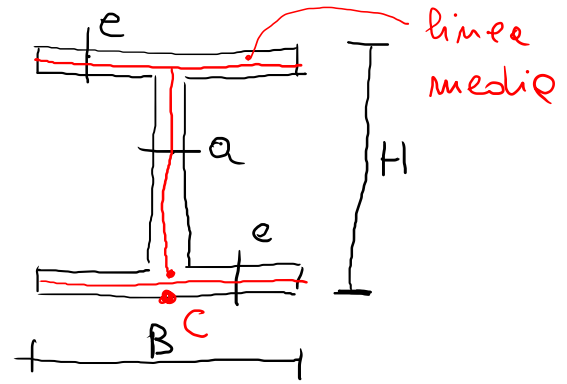
$$1 + \frac{y_c}{\rho_x^2} y = 0$$

$$y = - \frac{\rho_x^2}{y_c}$$

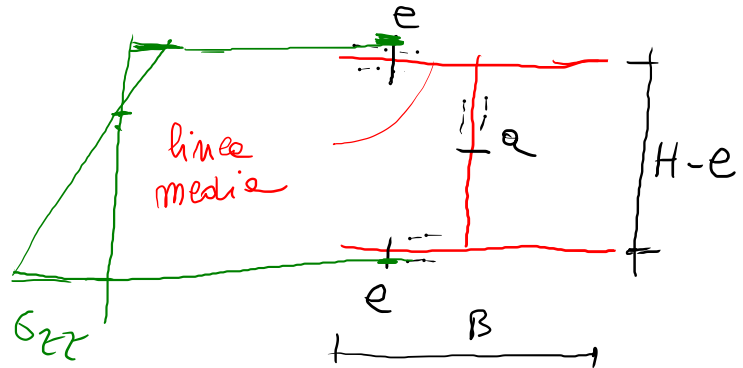
$$\begin{cases} y_c \neq 0 \\ x_c = 0 \end{cases}$$

$$y = - \frac{J_x}{A} \frac{1}{d} = - \frac{19430000}{2848} \frac{1}{500}$$

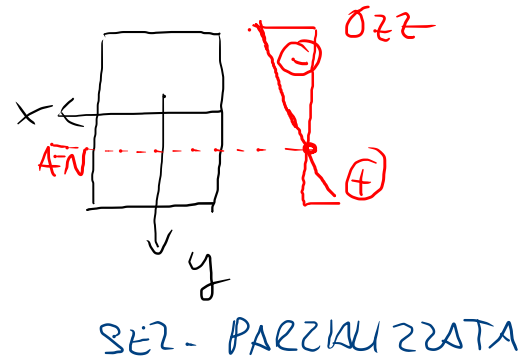
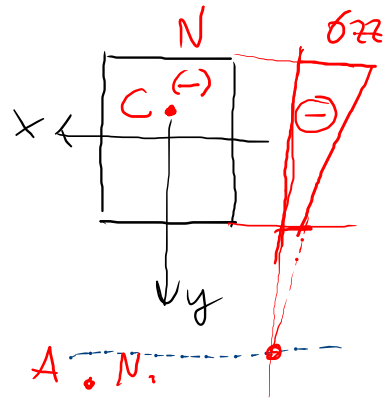
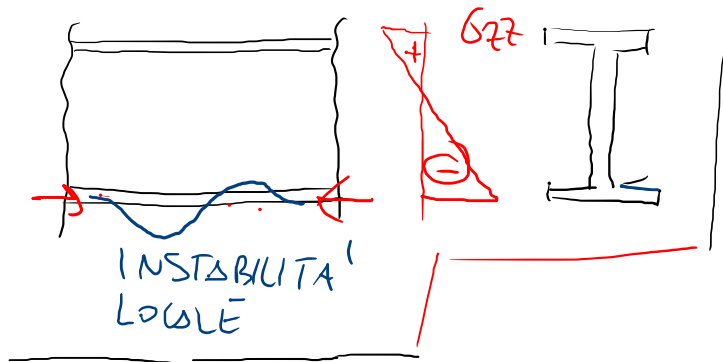
K



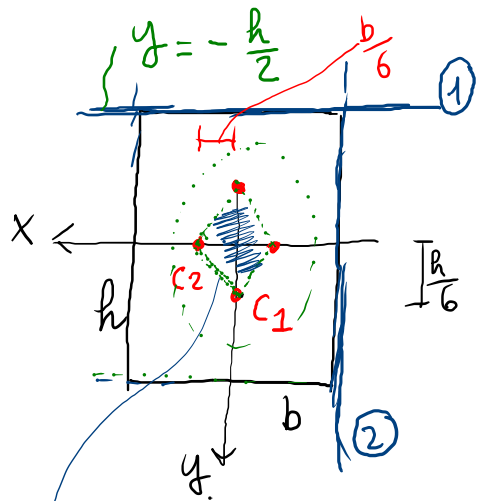
SCHEMA DELLA LA SEZ. ASSEGNATA
CON L'APPROSS. A PROFILO
SOITILE ATTRAVERSO 3 RETTANGOLI



OSSERVAZ: NEL PROBL DSV LE SEZ. DEVONO ESSERE COMPATTE, PERÒ NELL'ESTENSIONE DEL PROBL DSV ALLA TEORIA TECNICA DELLA TRAVE AMMETTIAMO ANCHE SEZ. SOTTILI SAPEENDO PERÒ CHE POSSO NASCERE PROBLEMI DI INSTABILITÀ LOCALE PER TENSIONI DI COMPRESSIONE



NOCCIOLO CENTRALE D'INERZIA : LUOGO DEI CENTRI DI PRESSIONE ASSOCIATI
AD ASSI NEUTRI CHE NON INTERSECONO LA SEZIONE

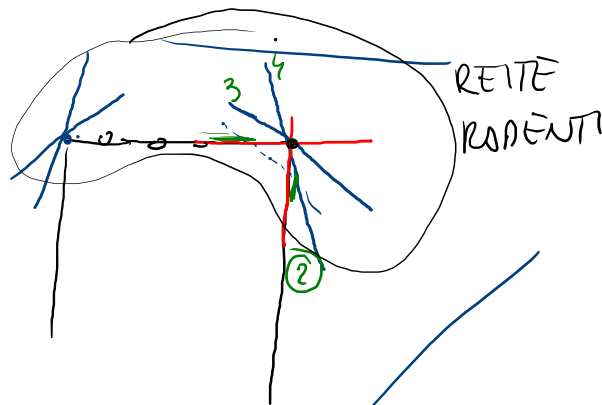


①: A.N. IL CUI C È FRONTIERA DEL NOCCIOLO

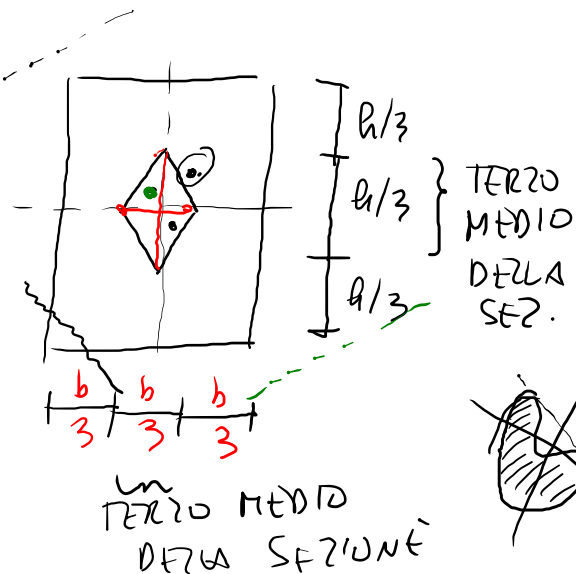
$$y = -\frac{P_x^2}{y_{C1}^2} \Rightarrow -\frac{h}{2} = -\frac{P_x^2}{y_{C1}^2} \rightarrow y_{C1} = \frac{P_x^2}{h/2} = \frac{h^2}{12} \cdot \frac{2}{h} = +\frac{h}{6}$$

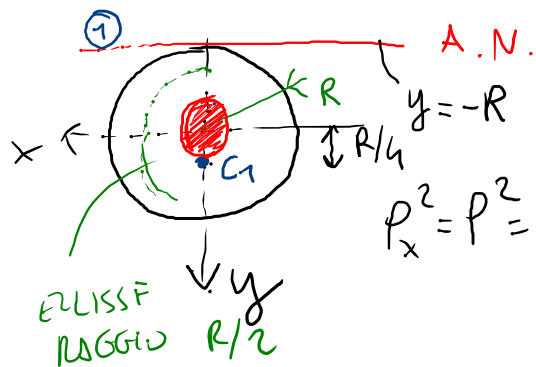
$$P_x = \sqrt{\frac{J_x}{A}} = \sqrt{\frac{\frac{bh^3}{12} \cdot 1}{bh}} = \sqrt{\frac{h^2}{12}}$$

NOCCIOLO DEL
RETTANGOLO
 $\Rightarrow$ ROMBO



NOCCIOLO CENTRALE
È FIGURA "CONVESSA"





$$P_x^2 = P^2 = \frac{J_x}{A} = \frac{\pi R^4}{4} \frac{1}{\pi R^2} = \frac{R^2}{4}$$

$$y = - \frac{P_x^2}{y_{C1}^2}$$

$$; \quad -R = - \frac{R^2}{4} \frac{1}{y_{C1}} \Rightarrow y_{C1} = + \frac{R}{4}$$

NOCCILO: CERCHIO DI RAGGIO $\frac{R}{4}$.