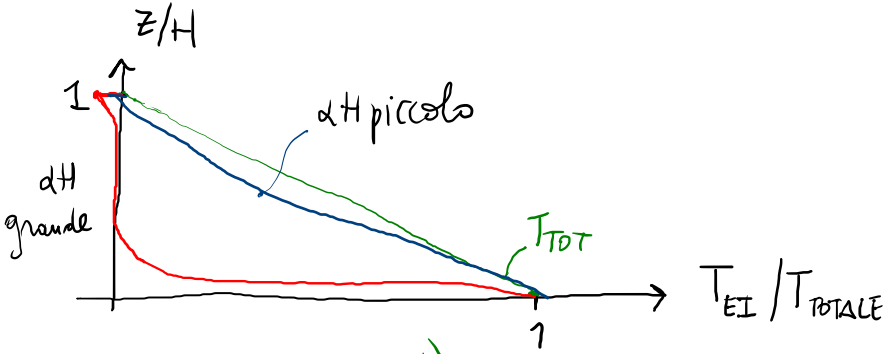
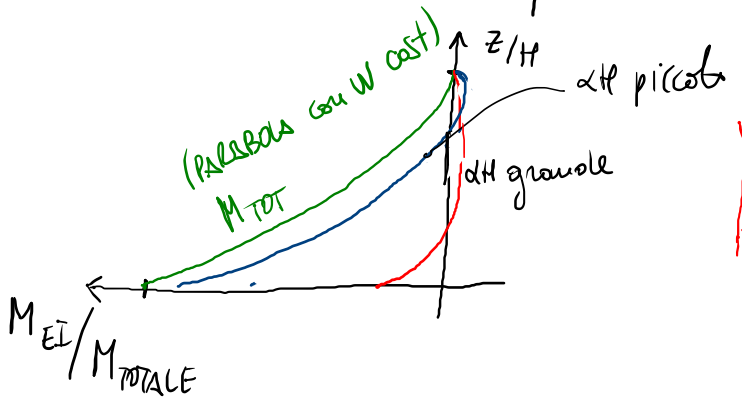
GRAFICI M, T (PROBL TELAIO + MENSOLA "EI")

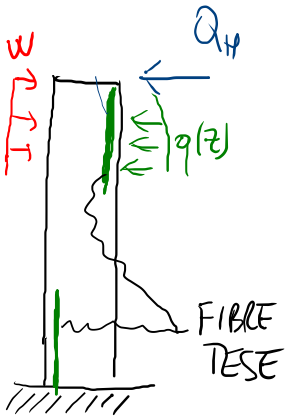
9/05/24

αH "grande" (>10): MENSOLA EI "soffice"

" "piccolo" (<1): " " "Rigida"







MENSOLA "EI"

- ossevo che: $M_{EI} + M_{GA} = -\frac{w(H-z)^2}{2}$; $T_{EI} + T_{GA} = w(H-z)$

- alcune solut in forme chiuse:

$$M_{EI}(z) = -w\left[\frac{H}{\alpha}\left(\tanh \alpha H \cosh \alpha z - \sinh \alpha z\right) + \frac{1}{\alpha^2}\left(\frac{\cosh \alpha z}{\cosh \alpha H} - 1\right)\right]$$

$$T_{EI}(z) = w\left[H\left(\cosh \alpha z - \tanh \alpha H \sinh \alpha z\right) - \frac{1}{\alpha}\left(\frac{\sinh \alpha z}{\cosh \alpha H}\right)\right]$$

$$y(z) = \frac{wH^4}{EI}\left[\frac{1}{(\alpha H)^4}\left[\frac{\alpha H \sinh \alpha H + 1}{\cosh \alpha H}\left(\cosh \alpha z - 1\right) - \alpha H \sinh \alpha z + (\alpha H)^2\left[\frac{z}{H} - \frac{1}{2}\left(\frac{z}{H}\right)^2\right]\right]\right]$$

HIGH-RISE BUILDINGS

POZZATI - vol 2-2 "TEORIA E TECNICA DELLE STRUTTURE", UTET

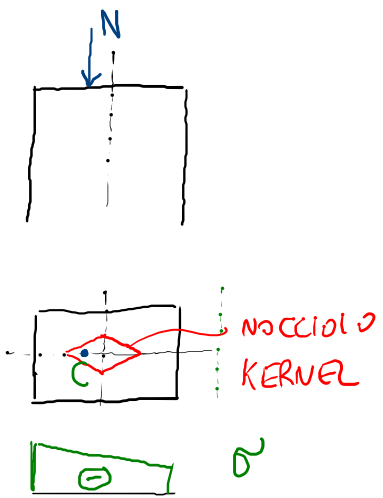
MECCANICA DELLE STRUTTURE MURARIE

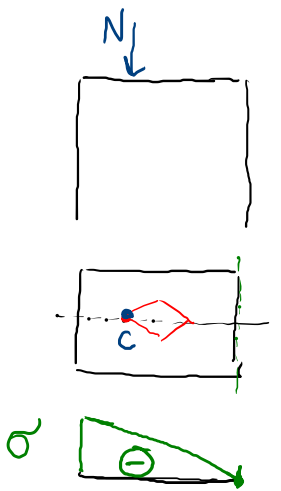
$\int_A \sigma \, dA = N$

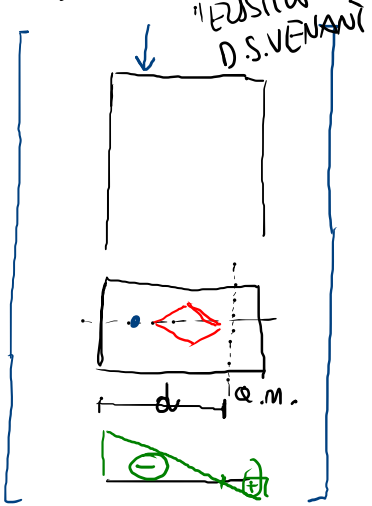
IPOTESI DI HEYMAN PER LA MODELLAZ. DELLE MURATURE

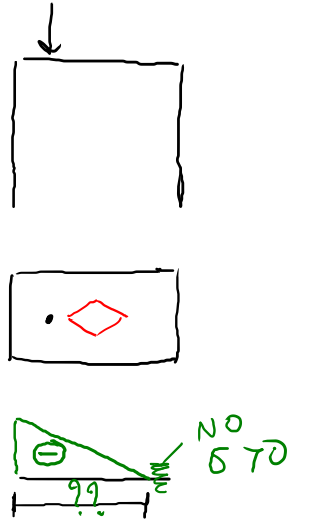
1) LA MURATURA NON HA RESIST. A TRAZIONE.
2) " " HA UNA INFINITA RESIST. A COMPRESSIONE.
3) LA CRISI PER SCORRIMENTO A TAGLIO DEI BLOCCHI NON PUÒ AVVENIRE.

PILASTRO COMPRESSO IN MATERIALE "NO-TENSION" (ELASTICO)

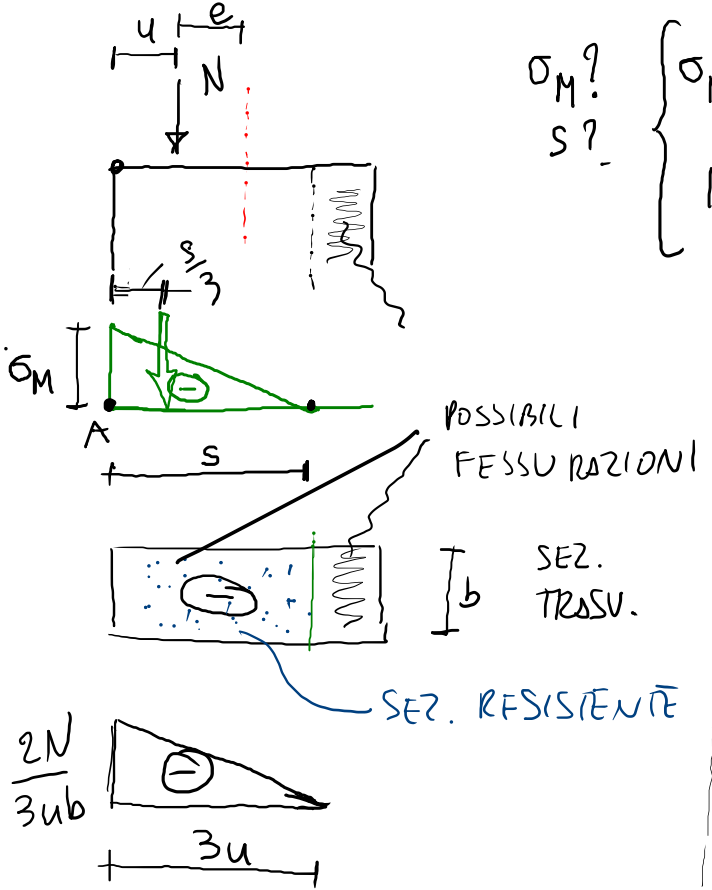








TENSIONI DI COMPRESSIONE IN UN MAT. NO-TENSION IN UN PILASTRO CARICATO CON "GRANDE" ECCENTRICITÀ.



σ_M? s?

$$\begin{cases} \sigma_M \, s \, b \, \frac{1}{2} = N & \text{(EQUIVALENZA TRASLAZ.)} \\ N u = \sigma_M \, s \, b \, \frac{1}{2} \, \frac{s}{3} & \text{(EQUIVALENZA MOM RISP. AD A)} \end{cases}$$

N

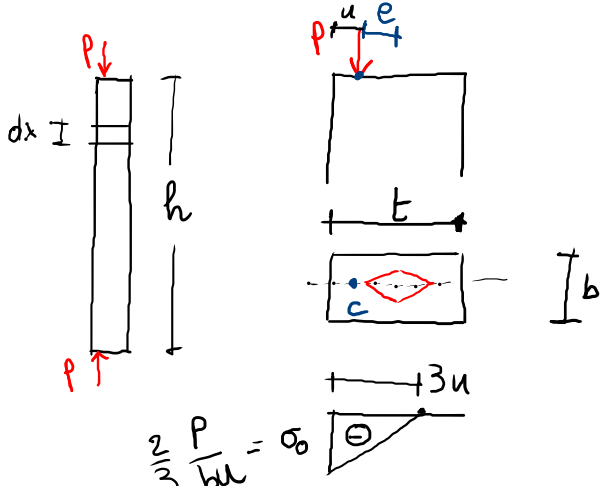
$$\rightarrow \quad \boxed{u = \frac{s}{3}} \quad ; \quad \sigma_M \, 3u \, b \, \frac{1}{2} = N \Rightarrow \boxed{\sigma_M = \frac{2N}{3ub}}$$

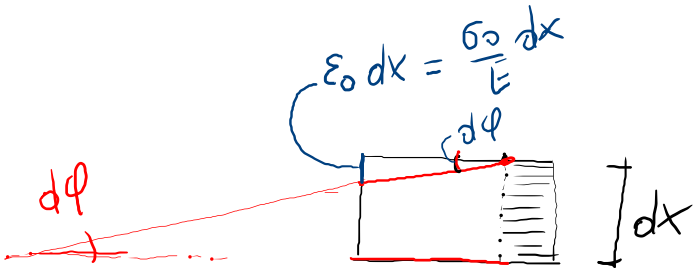
NOTA: AMMETTO CHE $\max |\sigma_M| = f_K$

QUANTO VALE u_{MIN}?

$$f_K = \frac{2N}{3 u_{min} b} \Rightarrow u_{min} = \frac{2N}{3b f_K}$$

INSTABILITA' DI UN PILASTRO "NO-TENSION" CARICATO A GRANDE ECCENTRICITA'





SEGUONO SLIDE E DIAGRAMMI DEL PROBLEMA DI YOKEL

CURVATURA INDOTTA

$\frac{d\varphi}{dx}$?

$$d\varphi = \frac{\varepsilon_0 dx}{3u} = \frac{\sigma_0}{E} dx \frac{1}{3u} = \frac{2}{9} \frac{P}{Ebu^2} dx \quad ; \quad \frac{d\varphi}{dx} = \frac{2}{9} \frac{P}{Ebu^2} \Rightarrow (u(x))$$