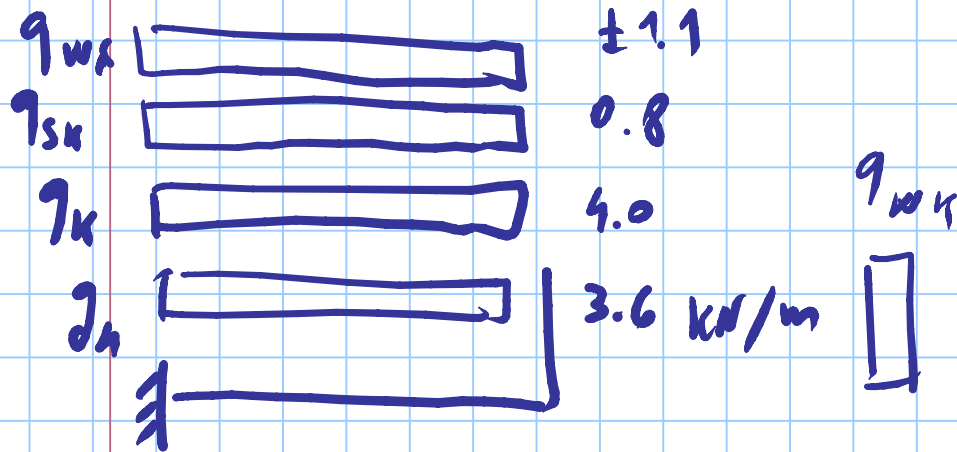


COMPITO

Titolo nota

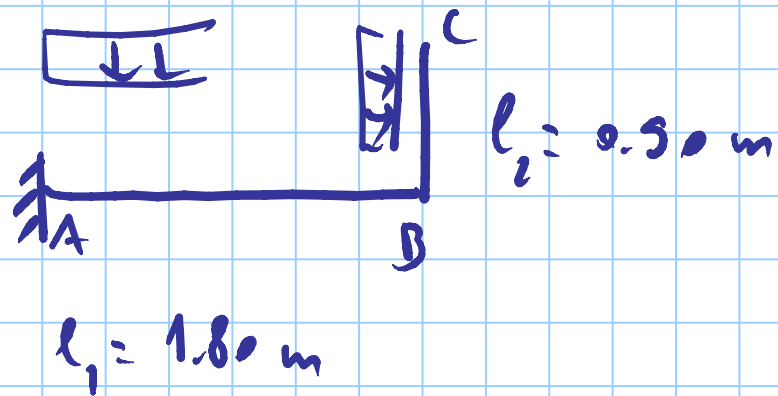
18/12/2013



per p. 4 $g_k = 1.6 \text{ kN/m}$

$$g_d = g_k \gamma_g = 3.6 \times 1.3 = 4.68 \text{ kN/m}$$

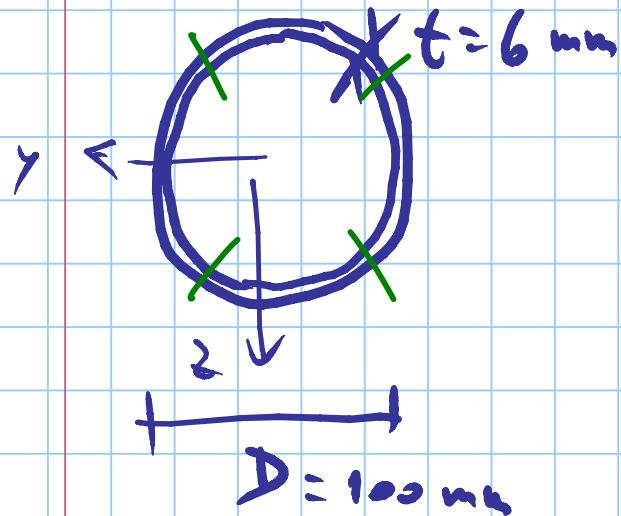
vento (secondario) $q_d = \gamma_g q_{rk} \psi_{ov} = 1.5 \times 1.1 \times 0.6 = 0.99 \text{ kN/m}$



$$M_B = \frac{q_1 l_2^2}{2} = \frac{0.95 \times 0.9^2}{2} = 0.40 \text{ kNm}$$

$$M_A = \frac{q_1 l_1^2}{2} + M_B = \frac{0.95 \times 1.8^2}{2} + 0.4 = 2.00 \text{ kNm}$$

limite frecc $2 \times \frac{1}{250} l_1 = 2 \times \frac{1800}{250} = 14.4 \text{ mm}$



$$A \approx \pi D t$$

$$= \frac{\pi D^2}{4} - \pi \frac{(D-2t)^2}{4}$$

$$A = 17.72 \times 10^2 \text{ mm}^2$$

$$I_{\text{cent}} \approx \frac{\pi R^4}{4} \approx \pi \frac{D^4}{64}$$

$$I = \frac{\pi}{64} (D^4 - D_{int}^4) = 196 \times 10^4$$

CONTROL LARE

$$D_{int} = 100 - 2 \times 6 = 88 \text{ mm}$$

TRAZIONE

$$N_{Ed} = 820 \text{ kN}$$

$$A \geq \frac{N_{Ed} \cdot \gamma_{M-1}}{f_y} = 2425 \text{ mm}^2$$

$$\text{HE } 120 \text{ A} \quad \rightarrow \quad 25,3 \times 10^2 \quad \text{pt } 5$$

$$\text{IPE } 200 \quad \rightarrow \quad 28,5 \times 10^2 \quad \text{pt } 3$$

IPE 140 3 fori nell'anima $\phi 13 \text{ mm}$

$$\hookrightarrow A = 1640 \text{ mm}^2$$

$$A_{\text{net}} = A - 3 \cdot t_w \cdot d_o =$$

$$t_w = 4.7 \text{ mm}$$

$$= 1457 \text{ mm}^2$$

$$N_{y, R1} = 0.9 A_{\text{net}} \frac{f_u}{\gamma_{M2}} = 0.9 \times 1457 \times \frac{510}{1.25} \times 10^{-3} =$$
$$= 535 \text{ kN}$$

$$N_{pl, Rd} = 446 \text{ kN}$$

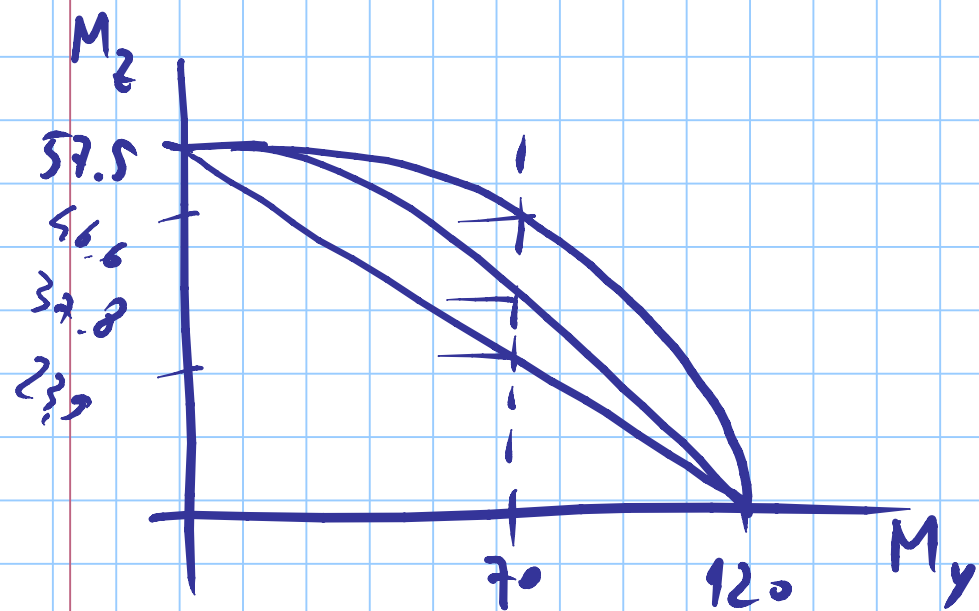
$$N_{u, Rd} = 424 \text{ kN}$$

$$N_{u, Rd} < N_{pl, Rd} \rightarrow \text{FRAZIONE}$$

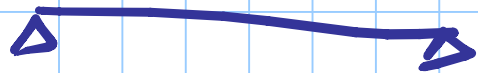
FLESSIONE

$$M_y = 70 \text{ kNm}$$

$$W_{pl, y} \geq \frac{M_{y, Ed}}{f_y / \gamma_{mo}} = 207 \times 10^3 \text{ mm}^3$$



COMPRESSION



$$l = 3.20 \text{ m}$$

IPE 220

$$i_{\min} = 24.8 \text{ mm}$$

$$\lambda = \frac{l_0}{i_{\min}} = \frac{3200}{24.8} = 129$$

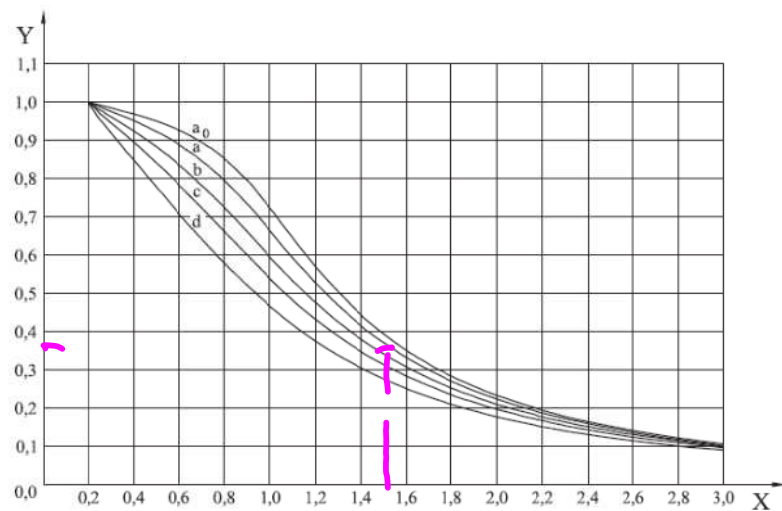
$$\lambda_1 = \pi \sqrt{\frac{E}{f_y}} = 76.4$$

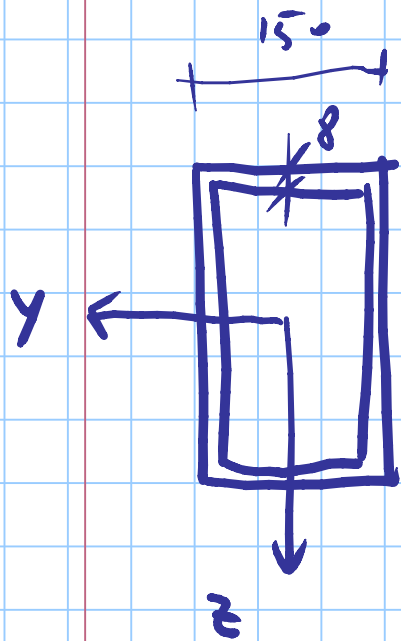
$$\bar{\lambda} = \frac{129}{76.4} = 1.69$$

$$\hat{\lambda} = 1.5$$

χ ?

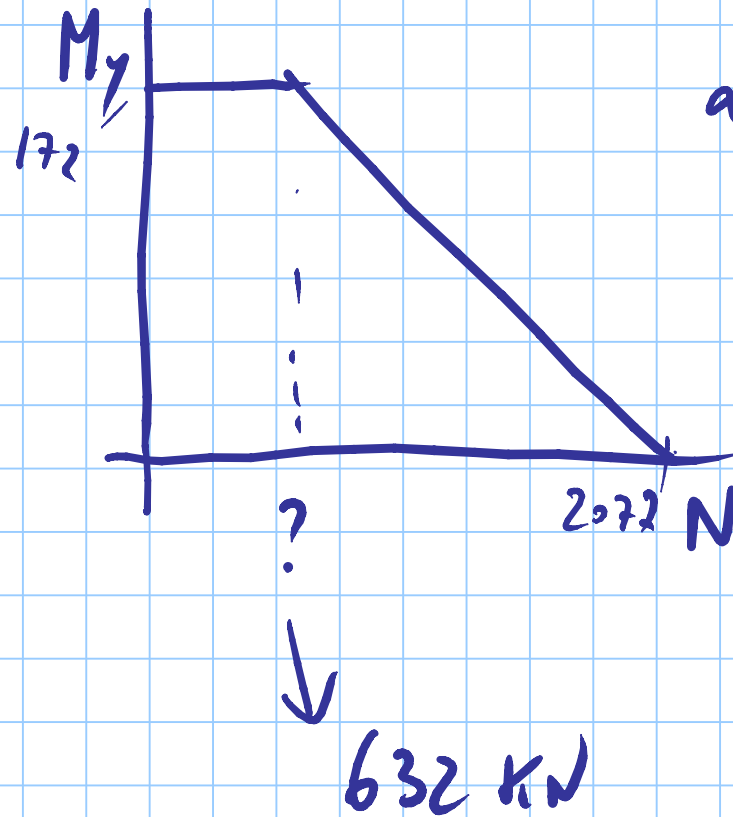
0.34



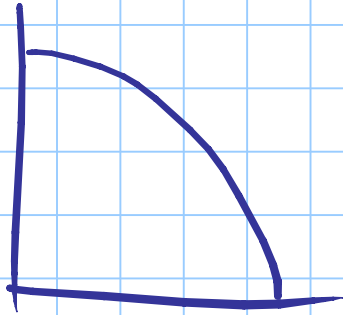


$$A = 61.44 \times 10^3 \text{ mm}^2 \quad (\text{from})$$

$$a = \frac{A - 2bt_f}{A} = 0.609$$



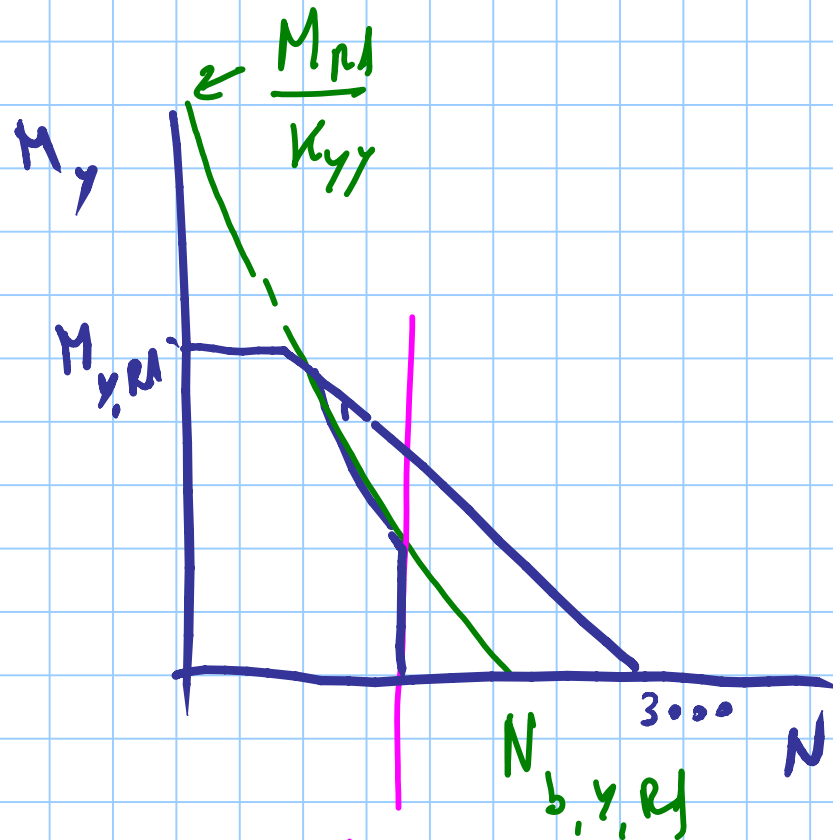
nell'altro piano.



x



pure flexion



A
 M_{y1}

B
 $K_{yy} M_{Ed}$

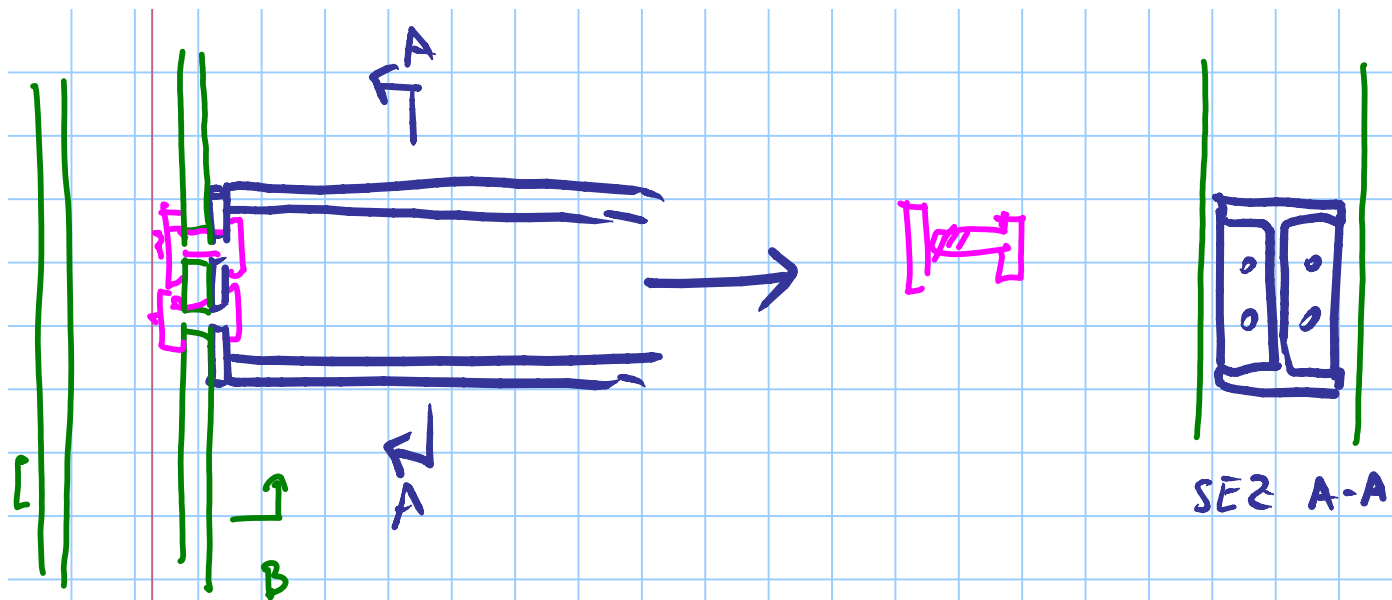
$$\left\{ \begin{array}{l} \frac{N_{Ed}}{N_{b,y,Rd}} + \frac{K_{yy} M_{Ed}}{M_{Rd}} \leq 1 \\ \frac{N_{Ed}}{N_{b,z,Rd}} \leq 1 \end{array} \right.$$

COLLEGAMENTI

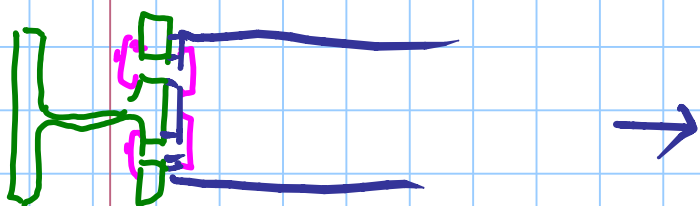
BULLONI

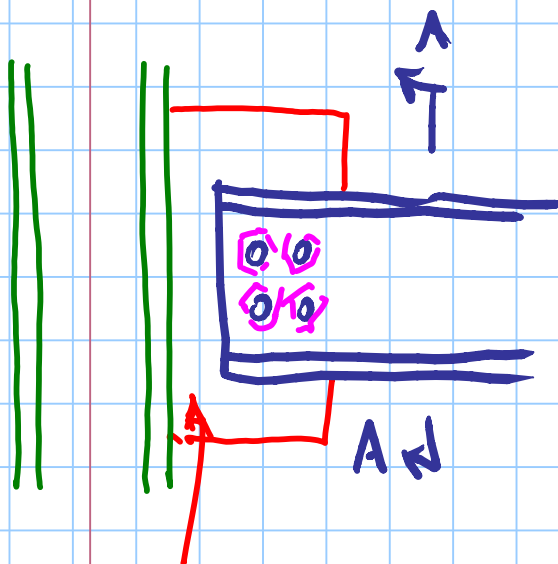
- a trazione + ver. punzonamento
- a taglio + ver. rifollamento
- collegamento?
ad attrito

SALDATURE

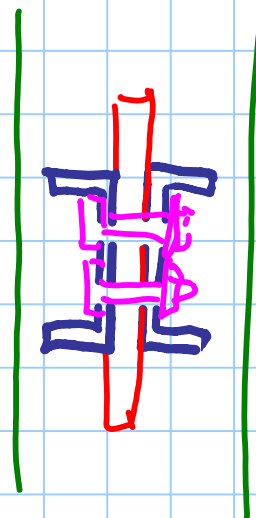


I BULLONI LAVORANO
A TRAZIONE



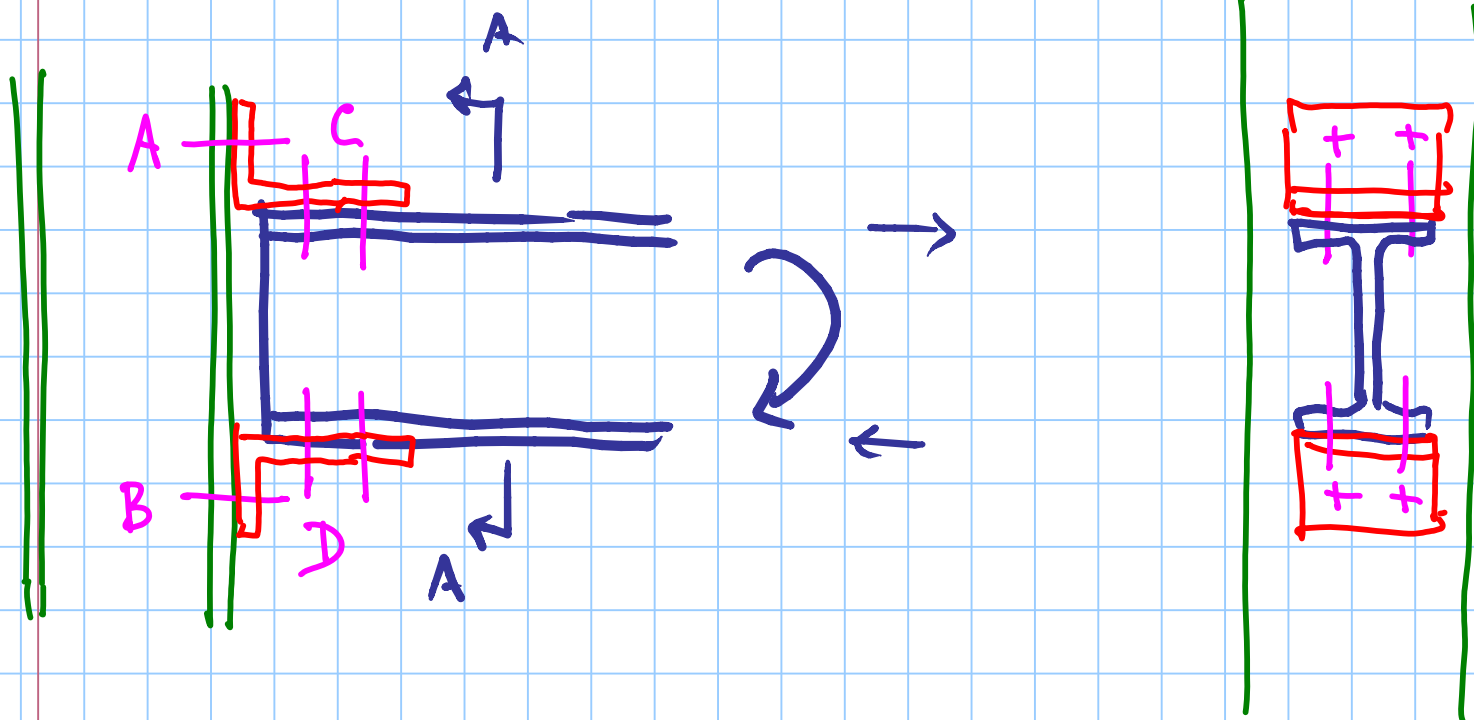


in alto
alle colonne

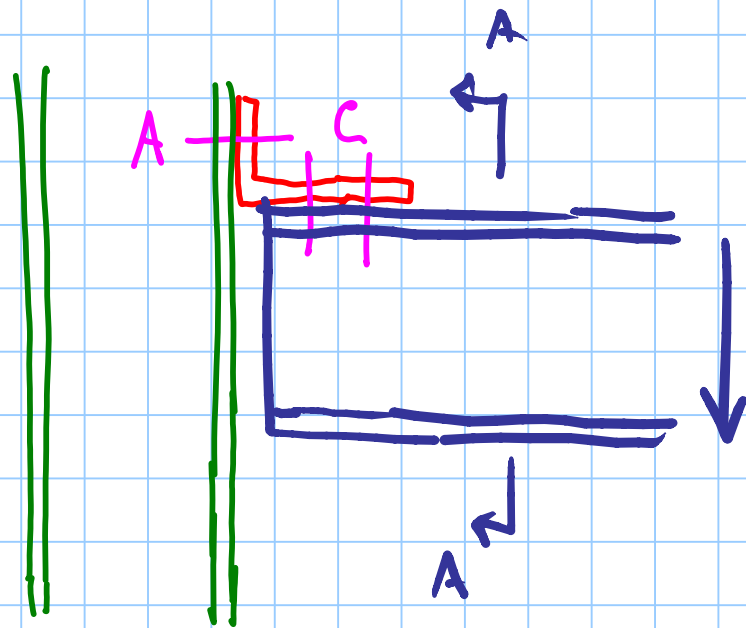


I BULLONI LAVORANO

A TAGLIO



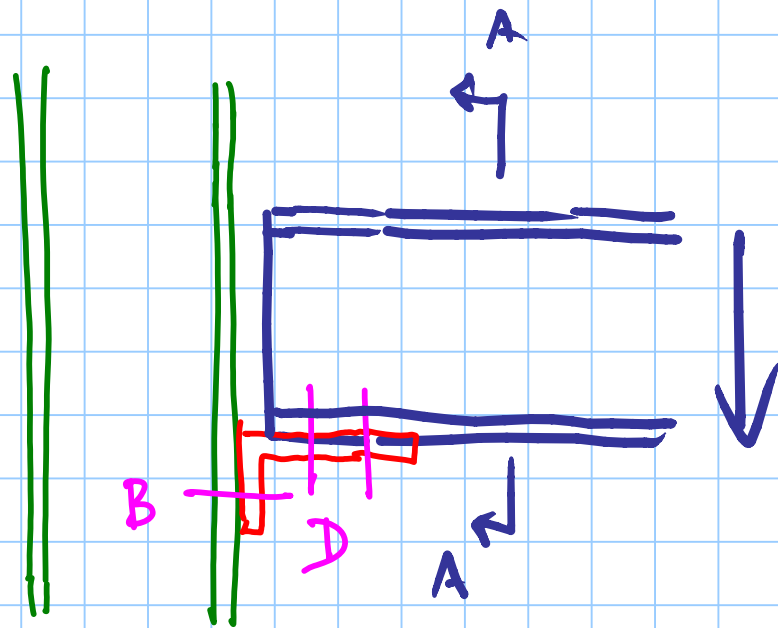
C, D a taglio
 A a Trazione
 B non lavora



porta anche M
 dopo il contatto
 Tra le chi

C a trazione

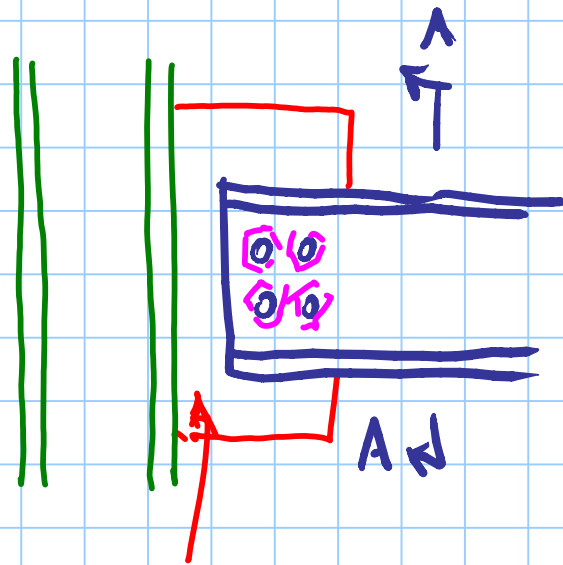
A a taglio



non può portare M
(o lo porta piccolissimo)

B a taglio

D non lavorava



salotto
alle colonne



per tutti i
collegamenti a TAGLI

occorre prima
superare l'attrito

in genere già avviene
→ i carichi di esercizio

ma si può progettare il collegamento
in modo da non superare la resistenza ad strito { in esec.
SLV