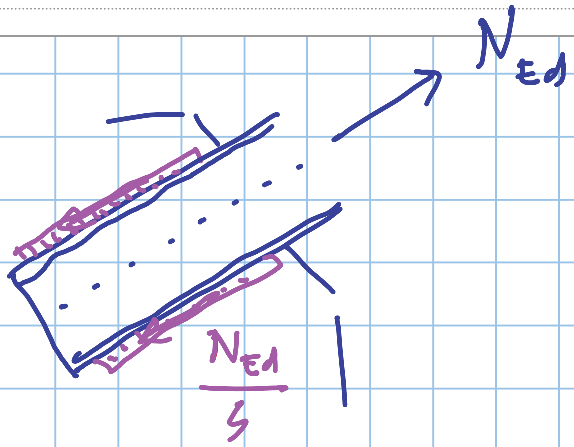
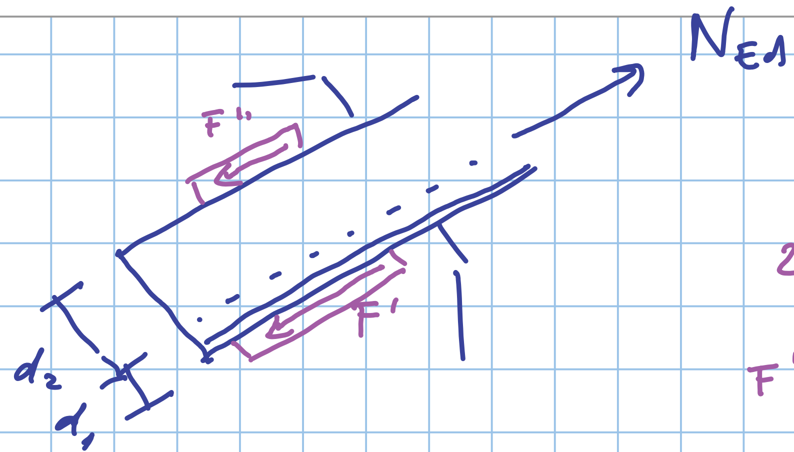




$\tau_{\parallel}$

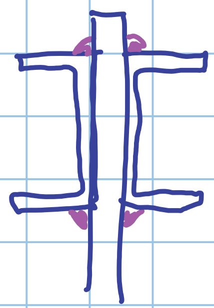
$$2(F' + F'') = N_{Ed}$$

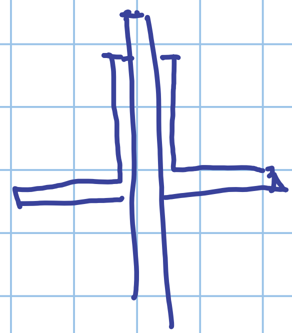
$$F'' d_2 = F' d_1$$

$$F'' = F' \frac{d_1}{d_2}$$

$$2\left(F' + F' \frac{d_1}{d_2}\right) = N_{Ed}$$

$$F' = \frac{N_{Ed}}{2\left(1 + \frac{d_1}{d_2}\right)} = \frac{N_{Ed}\, d_2}{2(d_1 + d_2)}$$





$$\frac{N_{Ed}}{4} \leq a\, l\, f_{vw,d}$$

2 L 80 × 80 × 8

$A = 12.3 \times 10^2\ mm^2$

S 275

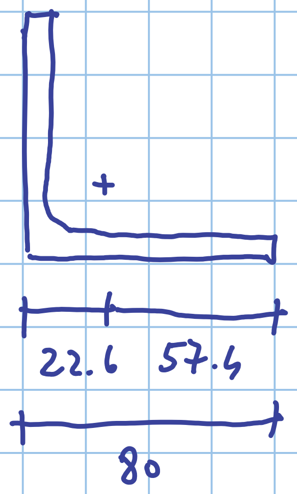
$f_{vwd} = 233.7\ MPa$

per 1 angolare

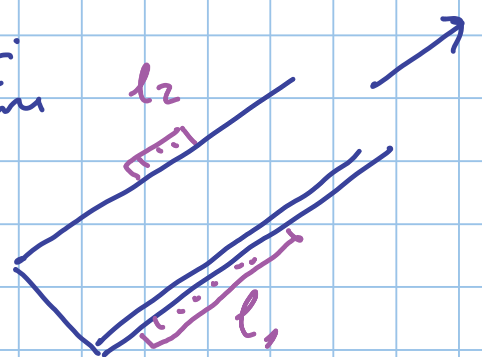
$N_{RA} = A \dfrac{f_y}{\gamma_{M0}} = 12.3 \times 10^2 \times \dfrac{275}{1.05} =$

$= 322.1\ kN$

$N_{Ed} = 500\ KN$ per 2 profili



4 cordoni di saldatura



$2\, a\, l_{TOT}\, f_{vwd} = N_{Ed}$

$l_{TOT} = \dfrac{N_{Ed}}{2\, a\, f_{vwd}}$

di una copp.

$\dfrac{d_1}{d_1 + d_2} = \dfrac{22.6}{80} = 0.283$

$\dfrac{d_2}{d_1 + d_2} = 0.717$

$\dfrac{0.283}{0.717} = 0.395$

$a\, l_{TOT} = \dfrac{N_{Ed}}{2 f_{vwd}} = \dfrac{500 \times 10^3}{2 \times 233.7} =$

$= 1070\ mm^2$

$a = 6\ mm$ $l_{TOT} = 178.3\ mm$

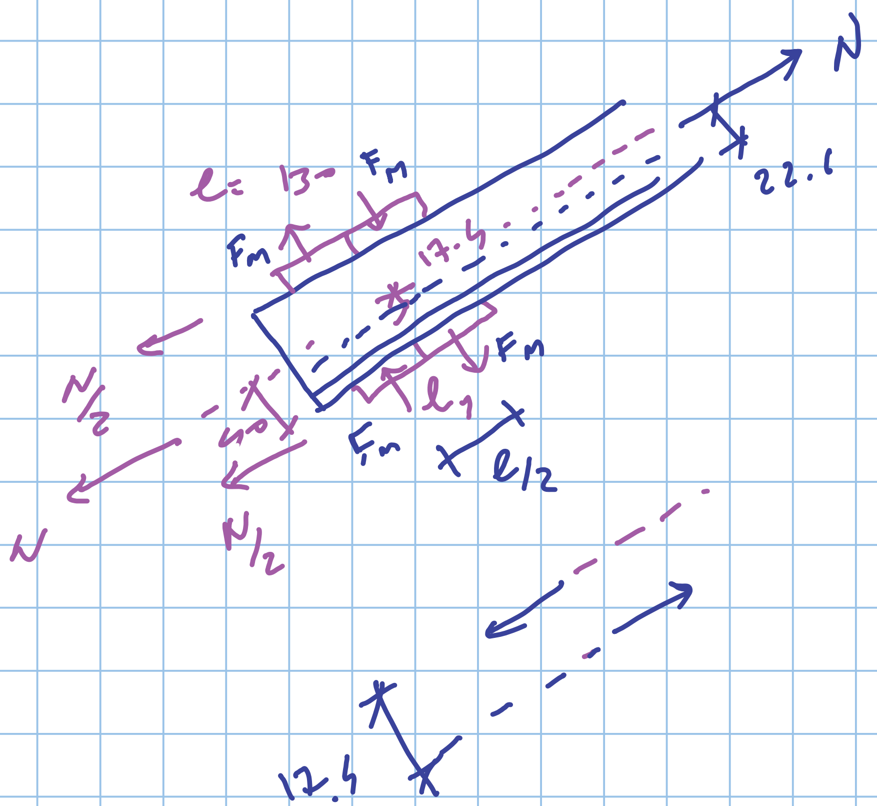
$l_{TOT} = 178.3$ mm $\qquad a = 6$ mm

STO GUARDANDO SOLO UN PROFILO

$l_1 = 178.3 \times 0.717 = 127.8$ mm $\rightarrow$ 130 mm

quindi qui $N = \dfrac{N_{Ed}}{2} =$

$l_2 = 50.5$ mm $\rightarrow$ 55 mm

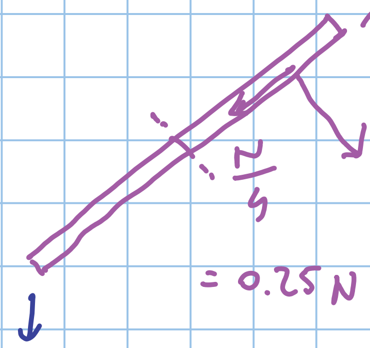


$M = N \times 17.4$ mm

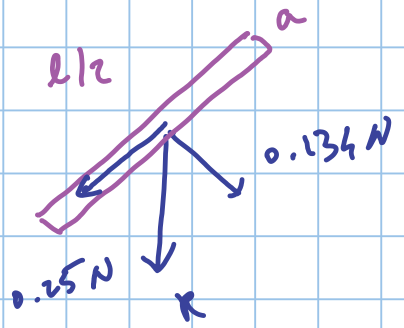
$l = 130$ mm

$$2F_n = \frac{M}{l/2}$$

mezzo cordone



$$\frac{M}{l} = \frac{N \times 17.4}{l} = 0.134\,N$$



SFERA

$$R = \sqrt{0.25^2 + 0.134^2}\ N = 0.284\ N$$

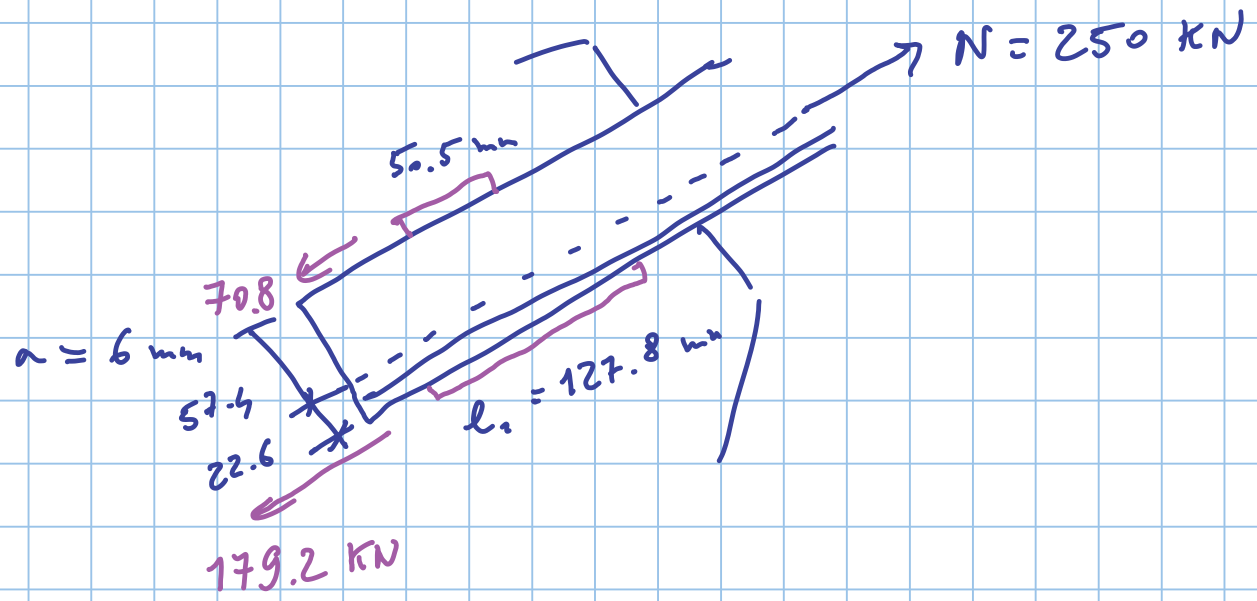
$$a\,\frac{l}{2}\,f_{vwd} \geq R$$

$$6 \times \frac{130}{2} \times 233.7 \geq 0.284\ N$$

$$N \leq \frac{6 \times 65 \times 233.7}{0.284}\,(\times 10^{-3}) = 320.9\ kN$$

$$N_{Rd} = 2 \times 320.9 = 641.8\ kN$$

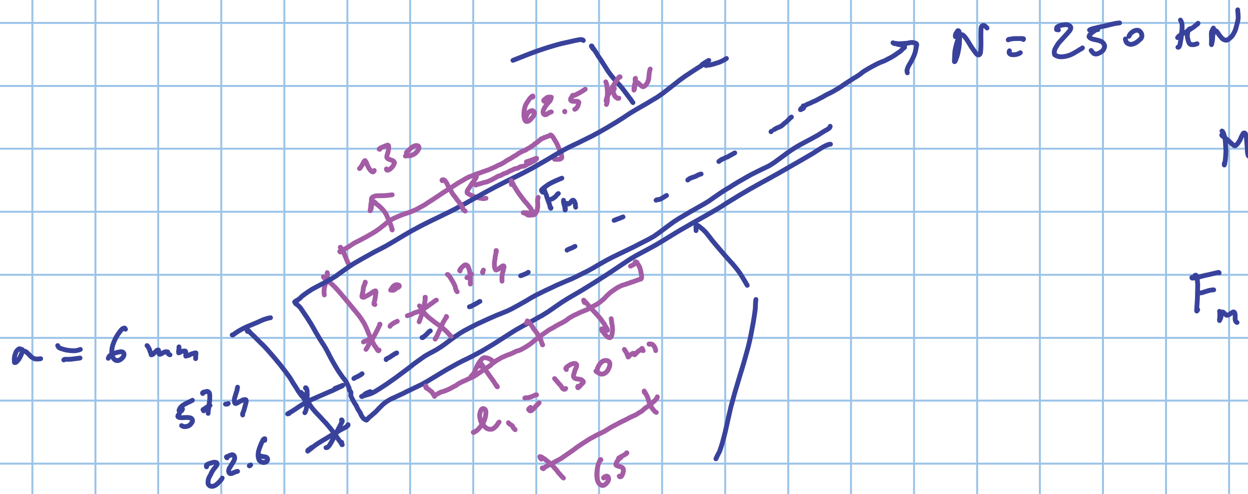
SOLO UN ANGOLARE



eq. traslaz. : 70.8 + 179.2 = 250 KN ok

" rotazione : 179.2 × 22.6 − 70.8 × 57.5 ≃ 0 ok

SOLO UN ANGOLARE

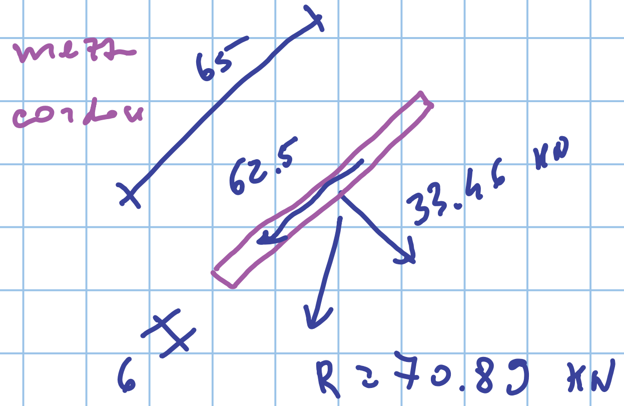


$$M = 250 \times 17.4 = 4.35 \text{ KNm}$$

$$F_m = \frac{M}{65 \times 2} = \frac{4.35 \times 10^6}{65 \times 2} = 33.46 \text{ KN}$$

$N = 250$ KN $\rightarrow$ $R = 70.89$

$N_{max} = 321.4$ KN $\leftarrow$ $R_{max} = 91.14$

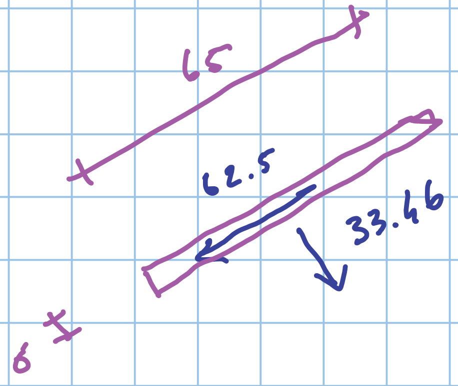


$$R = \sqrt{62.5^2 + 33.46^2} = 70.89 \text{ KN} \leq 91.14 \text{ ok}$$

$$a \frac{l}{2} f_{vwd} = 6 \times 65 \times 233.7 = 91.14 \text{ KN}$$

Se usiamo il dominio ellissoidale

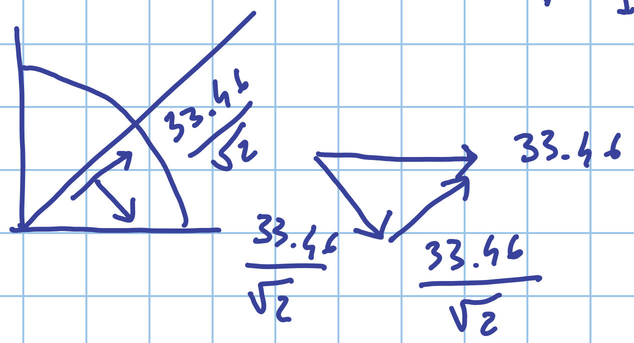
$f_{wd} = 404.8$ MPa



$$\tau_{//} = \frac{62.5 \times 10^3}{6 \times 65} = 160.26 \text{ MPa}$$

$$\sigma_\perp = \tau_\perp = \frac{33.46/\sqrt{2} \times 10^3}{6 \times 65} = 60.67 \text{ MPa}$$

$$\sqrt{\sigma_\perp^2 + 3\left(\tau_{//}^2 + \tau_\perp^2\right)} \leq f_{wd}$$



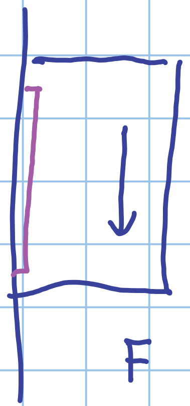
$$\sqrt{60.67^2 + 3\left(160.26^2 + 60.67^2\right)} = 302.94 \text{ MPa}$$

$302.94 < 404.8$ ok

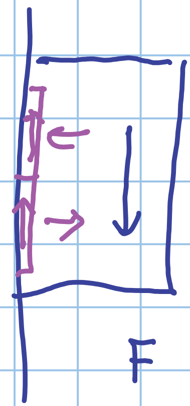
250 KN $\rightarrow$ 302.94 MPa

334.1 KN $\leftarrow$ 404.8

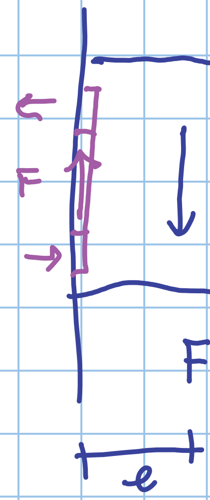
UN SOLO CORDONE



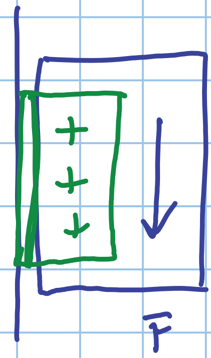
possibilità 1



possibilità 2

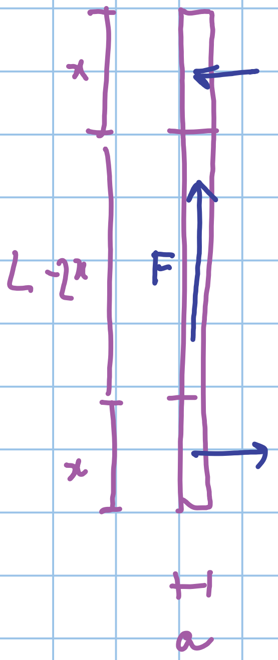


$M = Fe$



piatto e angolare

SFERA



$$\frac{F\cdot e}{L-x} \qquad \tau_\perp , \sigma_\perp \qquad \sqrt{\sigma_\perp^2+\tau_\perp^2} = \frac{Fe/(L-x)}{a\,x} \qquad x = \frac{L+2e-\sqrt{L^2+4e^2}}{2} \le \frac{L}{2}$$

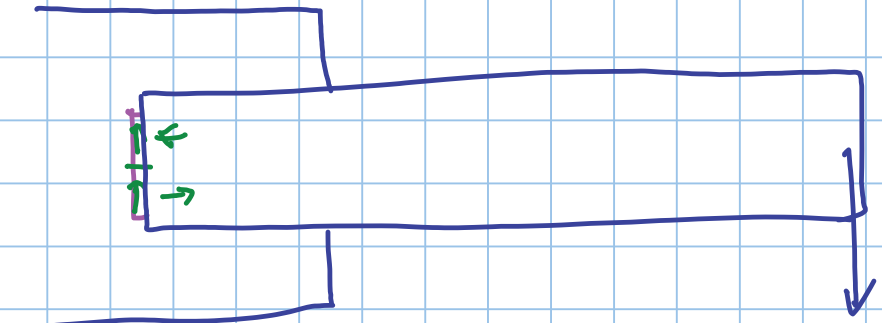
$$\tau_\parallel = \frac{F}{(L-2x)\,a}$$

$$\sqrt{\sigma_\perp^2+\tau_\perp^2} = \frac{Fe/(L-x)}{a\,x}$$

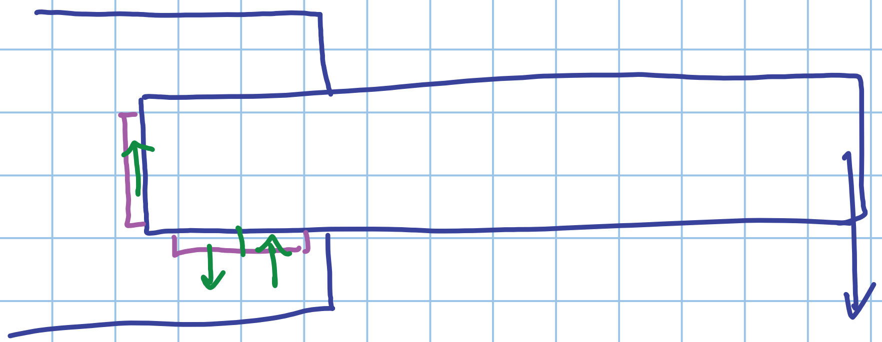
$$\frac{\cancel{F}\,e}{\cancel{a}\,x\,(L-x)} = \frac{\cancel{F}}{(L-2x)\,\cancel{a}}$$

$$e(L-2x) = x(L-x) \quad ; \quad eL-2ex = Lx - x^2$$

$$x^2-(L+2e)x+eL=0 \qquad x = \frac{L+2e\pm\sqrt{(L+2e)^2-4eL}}{2}$$

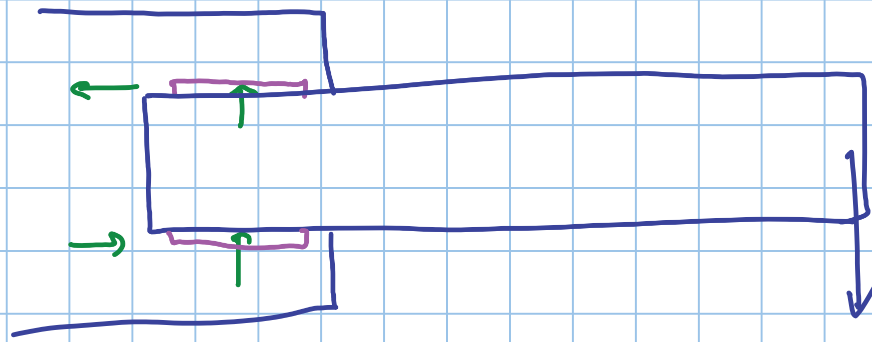


1 solo cordone (troppo sollecitato)

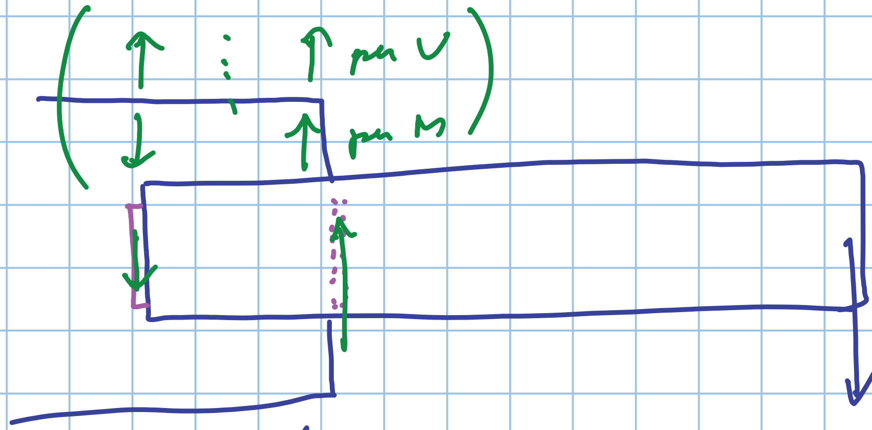


2 cordoni

(non mi entusiasma)

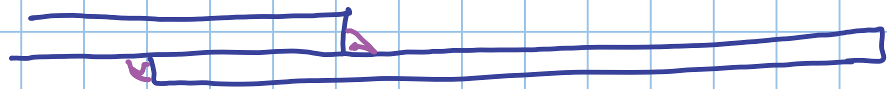


2 cordoni

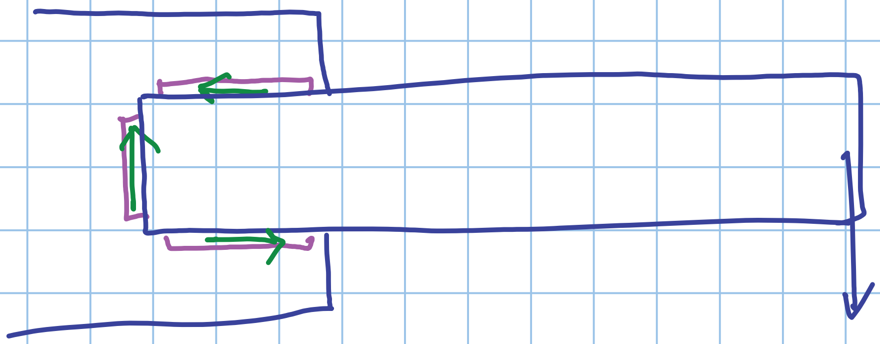


2 cordoni

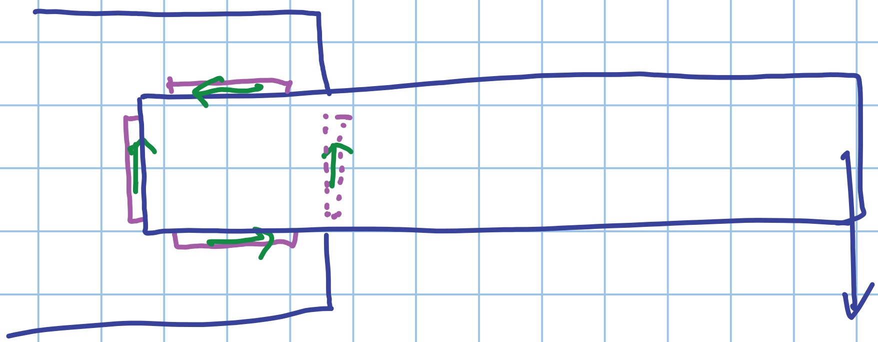
(meno buono)



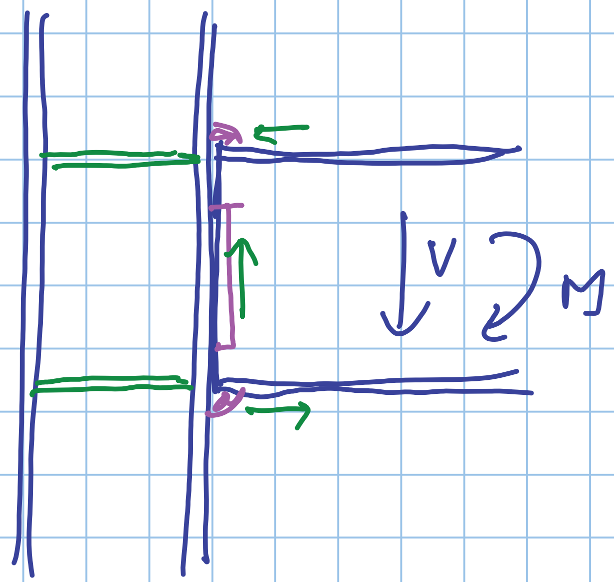
dall'alto

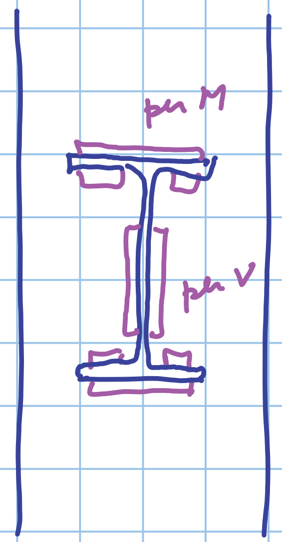


3 cordoni



4 cordoni


V
M


pn M
pn V