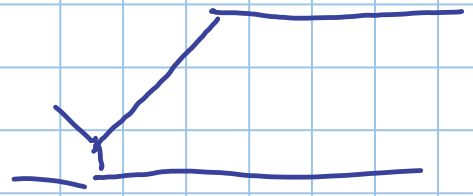
SALDATURE

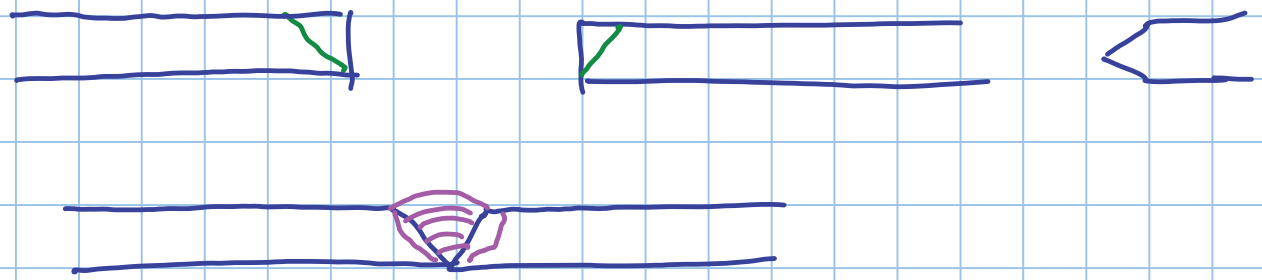
Titolo nota 20/12/2017

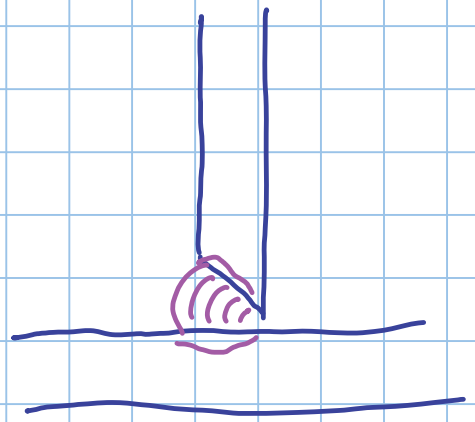
CANNELLO OSSIACETILENICO



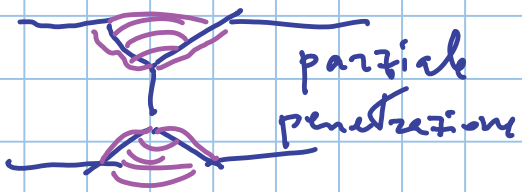
SALDATURA AD ARCO ELETTRICO

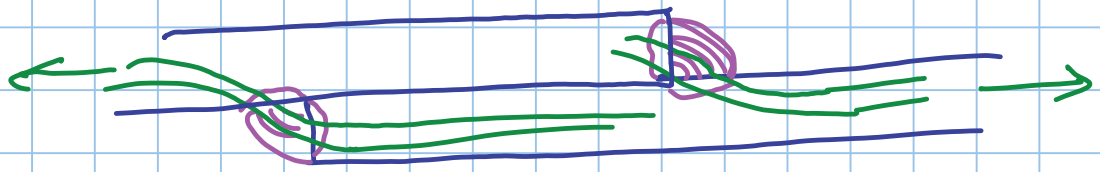
CIANFRINO





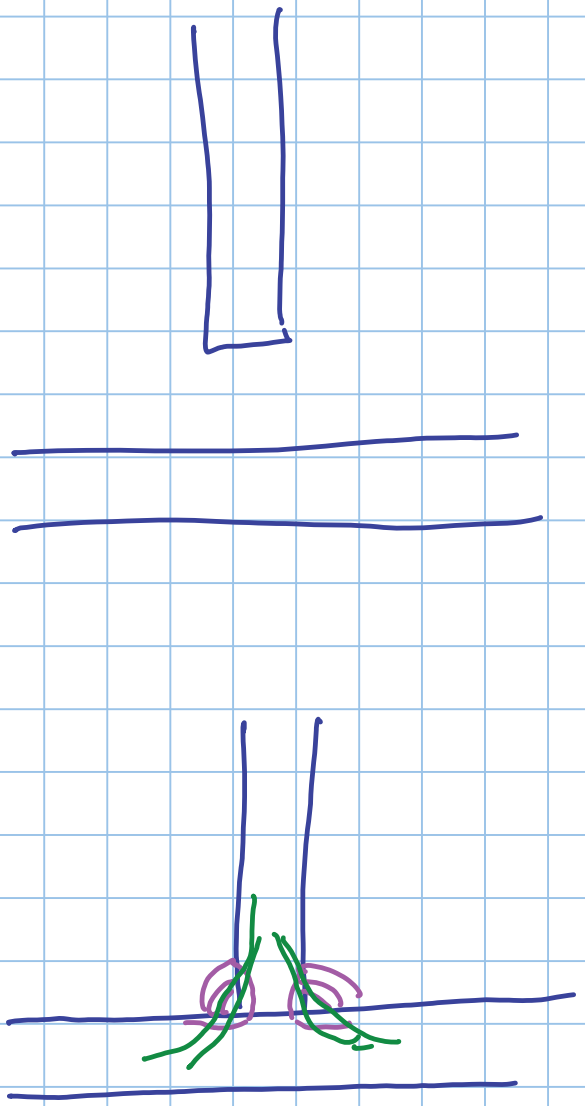
SALDATURA A
COMPLETA PENETRAZIONE



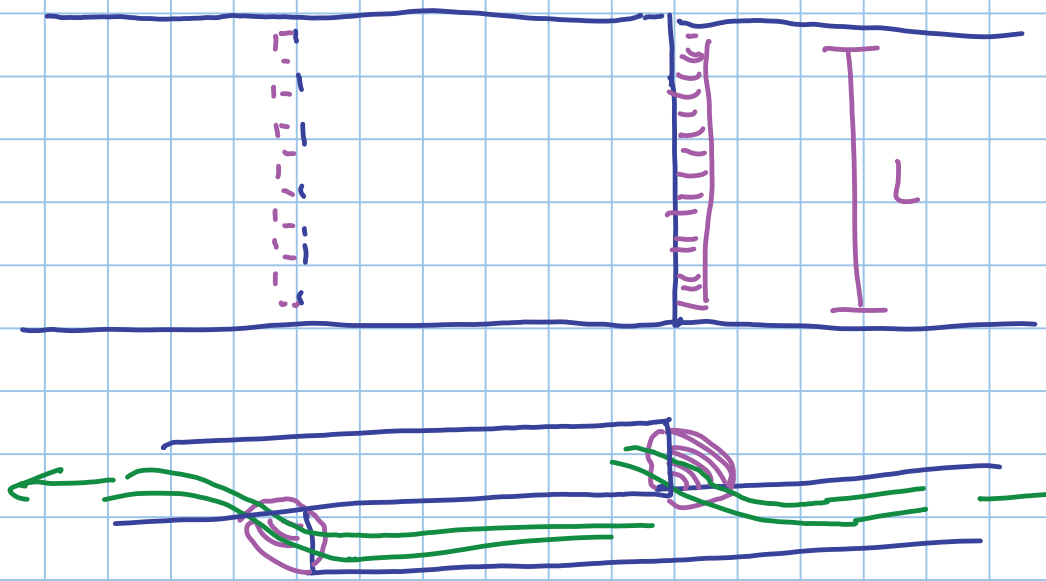


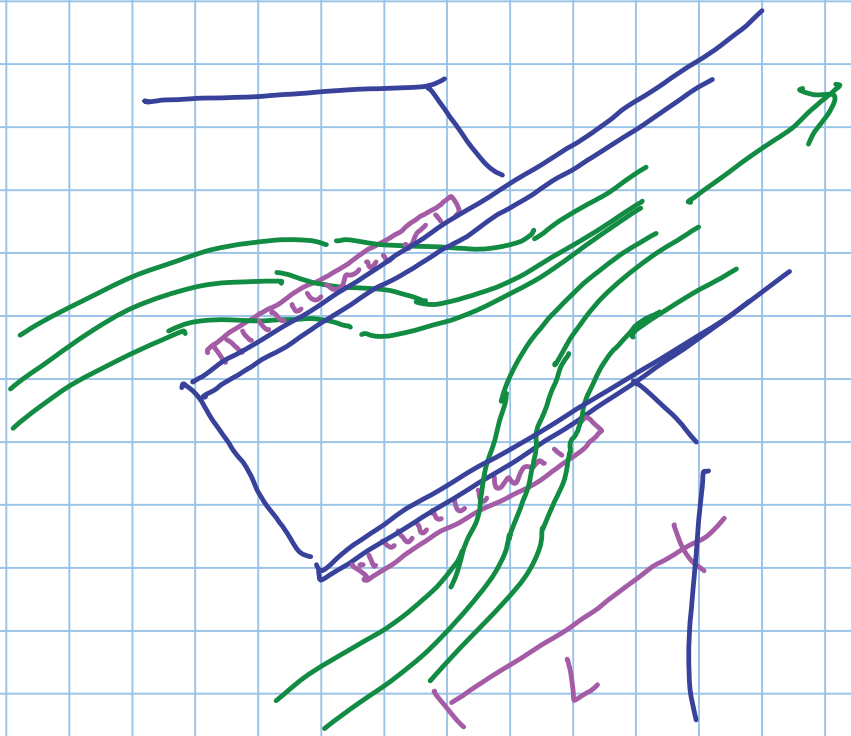
SALDATURA

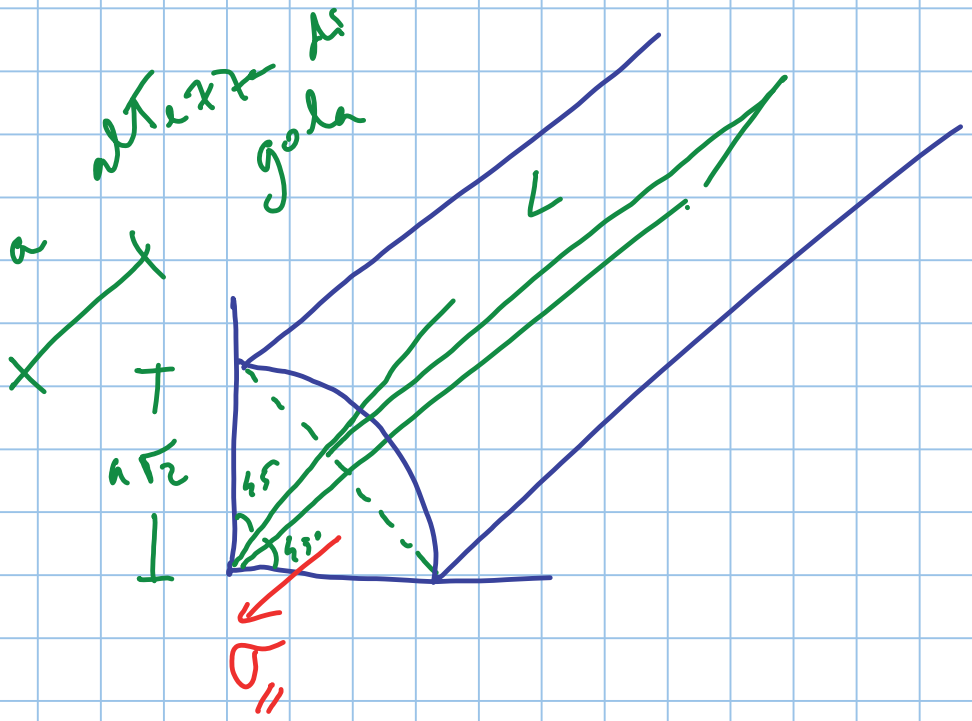
A CORDONE D'ANGOLO

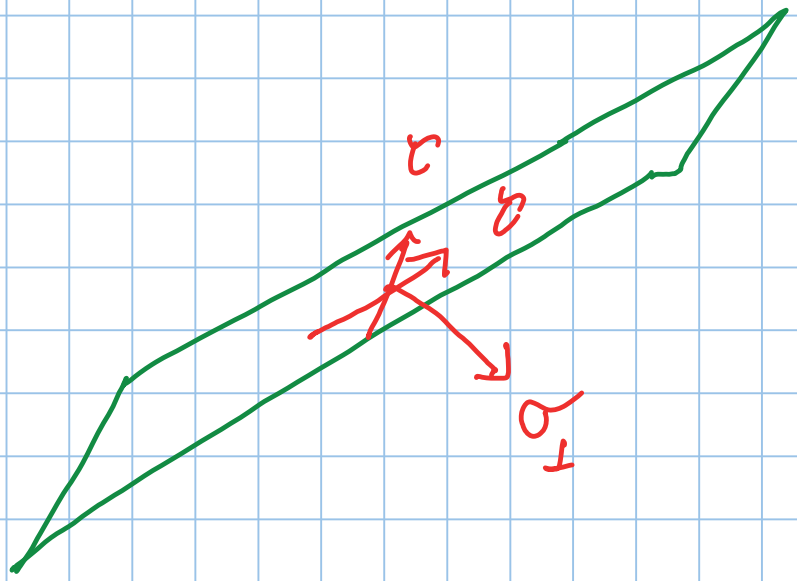


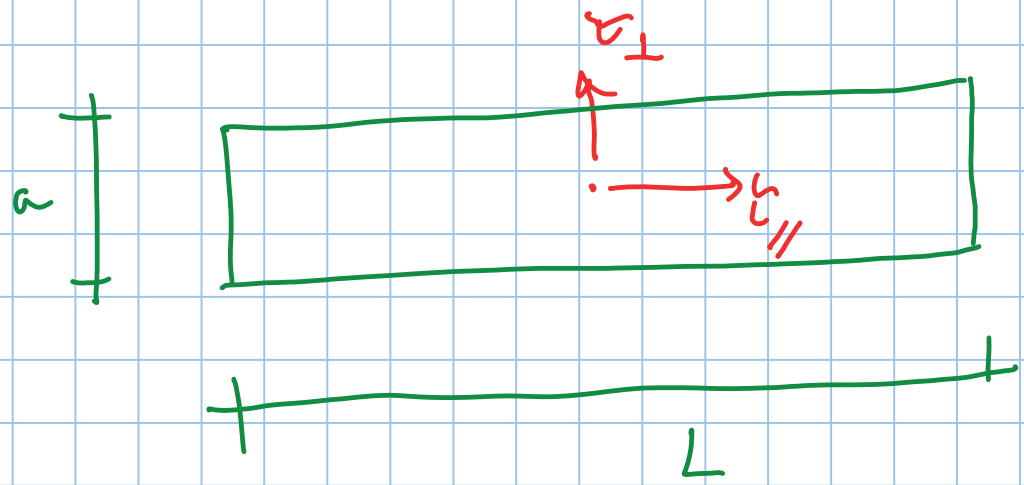
L = lunghezza del cordone di saldatura





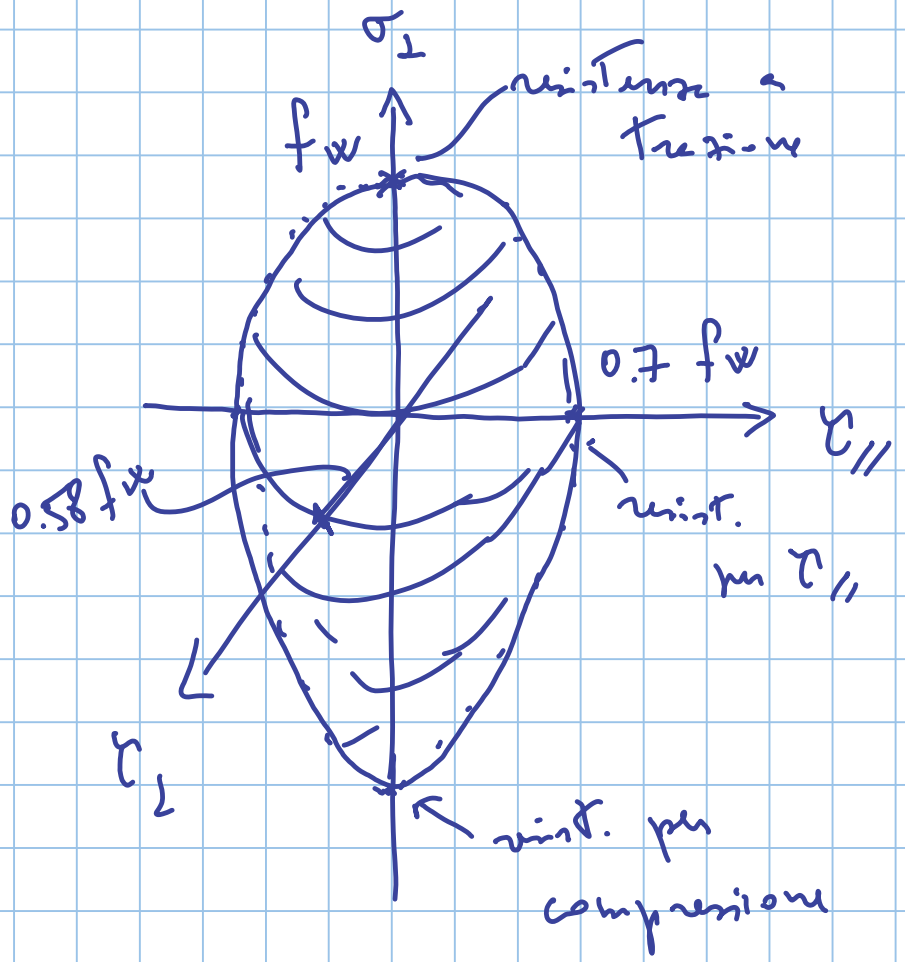






area della sezione

di gola $a \cdot L$



PEROIDE

w = welding

saldatura

$$\tau_{// max} = \frac{f_w}{\sqrt{2}}$$

$$\tau_{\perp max} = \frac{f_w}{\sqrt{3}}$$

$$\sigma_\perp^2 + 2\,\tau_{//}^2 + 3\,\tau_\perp^2 = f_w^2$$

OGGI Eurocodici e NTC

$$\sigma_\perp^2 + 3\left(\tau_\perp^2 + \tau_{\parallel}^2\right) \le f_{wd}^2$$ ELLISSOIDE di rotazione

$$\sigma_\perp^2 + \tau_\perp^2 + \tau_{\parallel}^2 \le \frac{f_{wd}^2}{3}$$ SFERA più cautelativo

$$f_{wd} = \frac{f_w}{\gamma_{M2}} = \frac{f_u}{\beta_w \gamma_{M2}}$$

	β_w	per
	0.80	S235
	0.85	S275
	0.90	S355

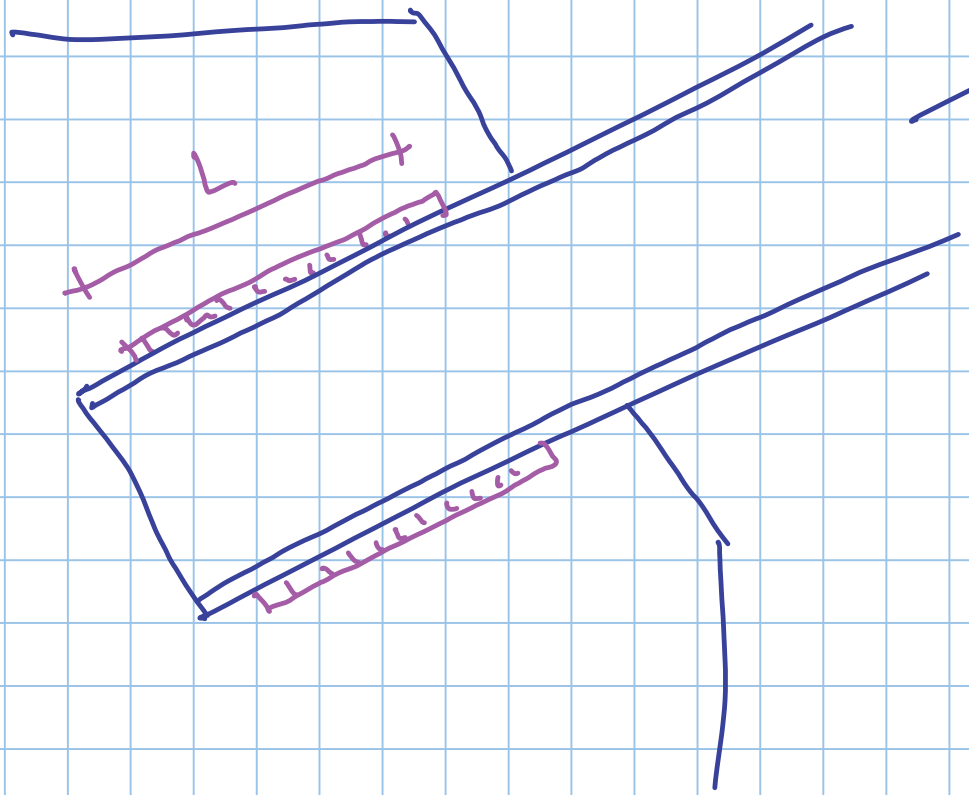
Es. S275 $f_{wd} = \frac{430}{0.85 \times 1.25} = 404.7$ MPa

$$\frac{f_{w1}^2}{3} = \left(\frac{f_{w1}}{\sqrt{3}}\right)^2 = f_{vwd}^2$$

$$f_{vwd} = \frac{f_u/\sqrt{3}}{\beta_w \gamma_{M2}}$$

$E_{o.}$ 5275

$$f_{vwd} = \frac{404.7}{\sqrt{3}} = 233.7 \text{ MPa}$$



$N_{EA} = 400\ kN$

S 275

per ciascun cordone

$F = 200\ kN$

$f_{vwd} = 233.7\ MPa$

$area = \frac{200 \times 10^3}{233.7} = 855.8\ mm^2$

$a = 8\ mm$

$L \geq \frac{855.8}{8} = 107\ mm$

$L = 110\ mm$

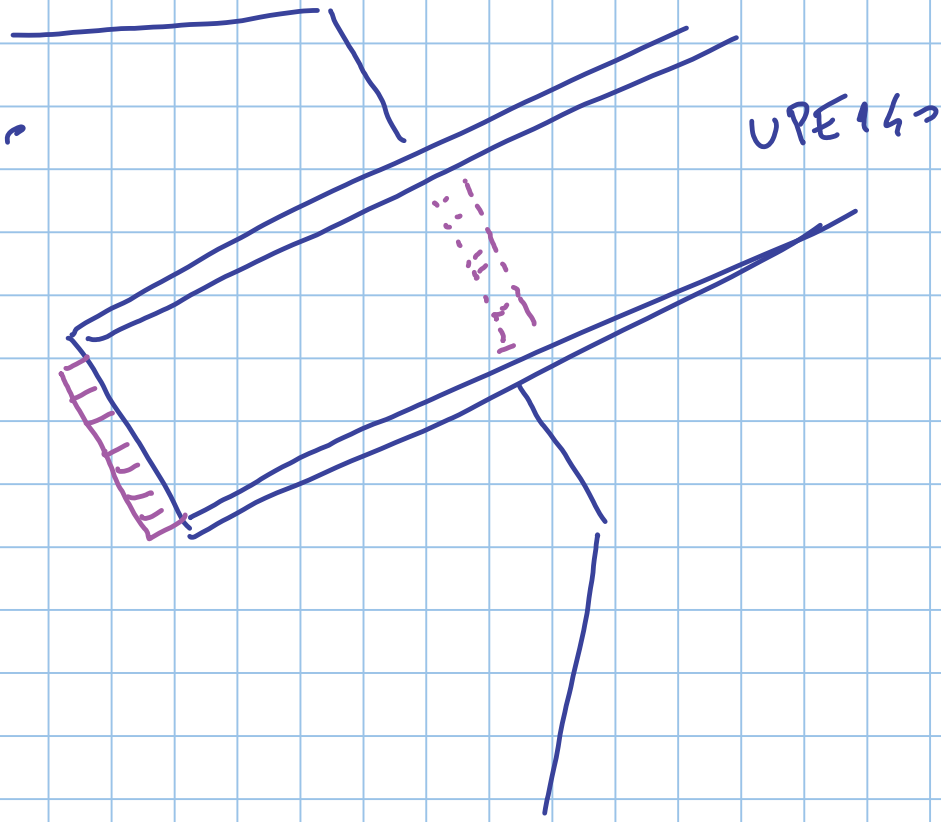
SI USA RARAMENTE

problema

$t_w = 5$ mm per UPE 140

limita a

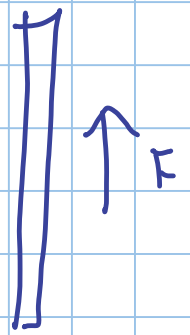
in quest. caso non si riesce a dare una adeguata sufficienza



cordone $a = 8$ mm $L = 110$ mm S275

$$F_M = a L f_{vwd} = 8 \times 110 \times 233.7 \times 10^{-3} = 205.6 \text{ kN}$$

comunque orientato



$F_{Rd} = 205.6$ kN

sfrc e/o ellissoide

h. $\tau_{//} = \dfrac{F}{aL}$

sfera o ellissoide

stato singolare

F

$F_{Rd} = 252.8$ ellissoid

$F_M = 205.6$ sfera

$$\sigma_\perp = \frac{F/\sqrt{2}}{a\ell} = \tau_\perp$$

$$\sigma_\perp^2 + 3\tau_\perp^2 + 3\tau_\parallel^2 \le f_{wd}^2$$

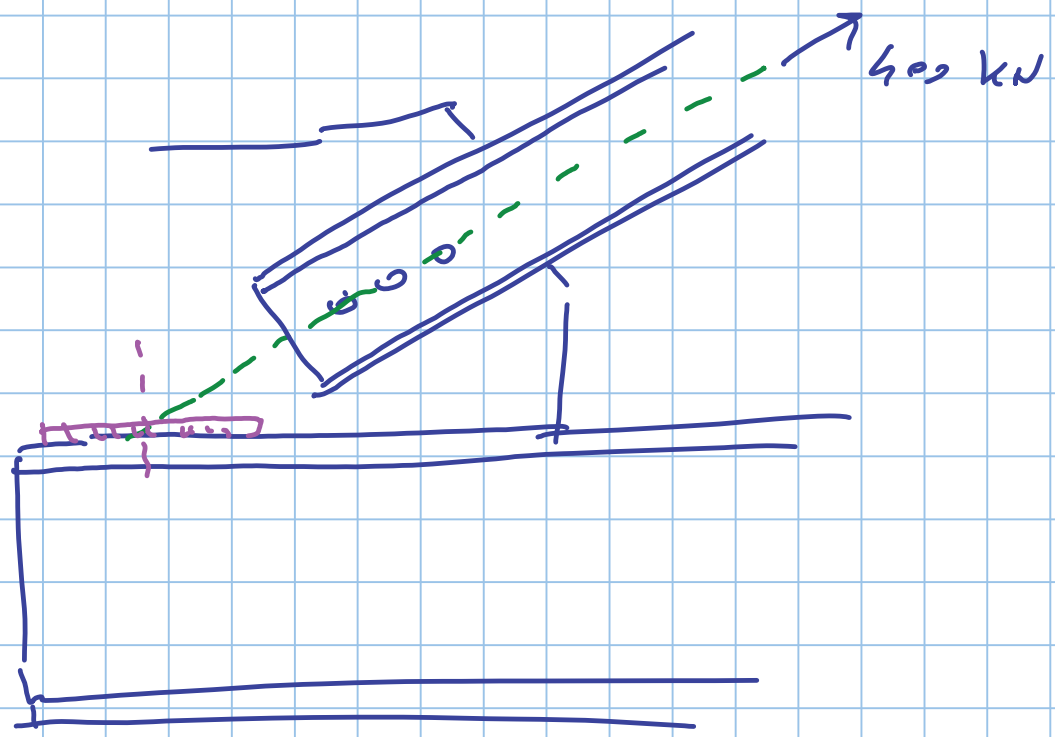
$$\left(\frac{F/\sqrt{2}}{a\,l}\right)^2 + 3\left(\frac{F/\sqrt{2}}{a\,l}\right)^2 \le f_{wd}^2$$

$$\frac{F^2}{2\,a^2 l^2} + 3\,\frac{F^2}{2\,a^2 l^2} \le f_{wd}^2$$

$$\frac{2\,F^2}{a^2 L^2} \le f_{wd}^2 \qquad F^2 \le \frac{a^2 L^2}{2}\, f_{wd}^2$$

$$F \le \frac{a\,L\,f_{wd}}{\sqrt{2}}$$

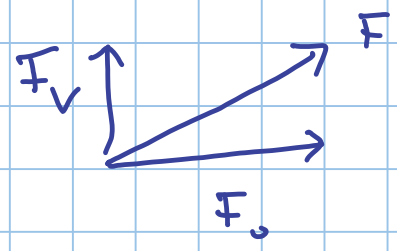
$$F_{Rd} = \frac{8 \times 110}{\sqrt{2}} \times 409.7 \times 10^{-3} = 252.8\ \text{kN}$$



2 cordoni

$a = 8 \quad L = 110$ mm

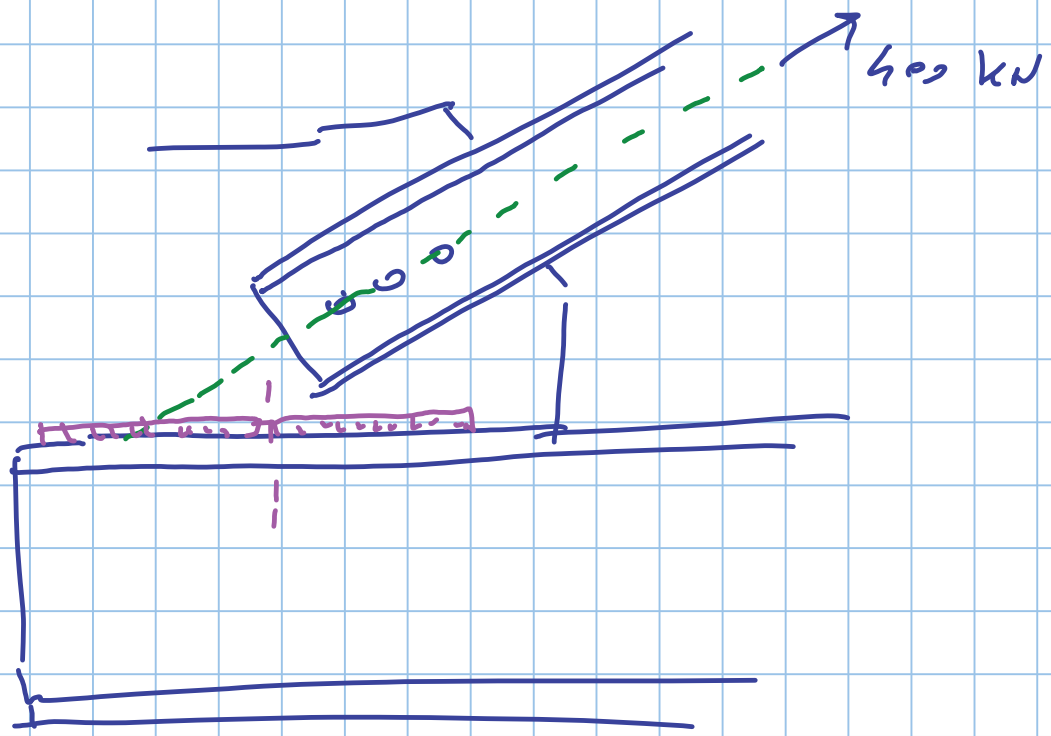
o dimensioni con A equivalente

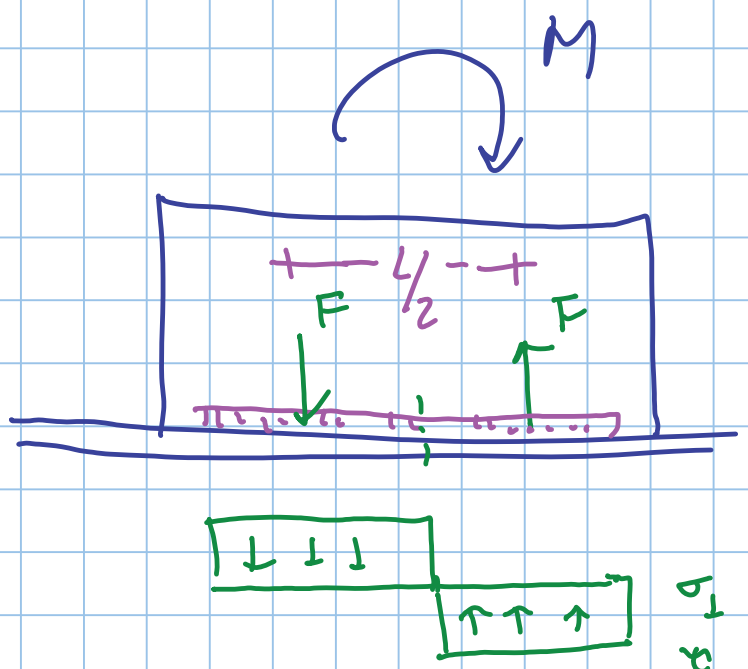


$$\tau_{//} = \frac{F_o}{aL}$$

$$\sigma_\perp = \frac{F_V/\sqrt{2}}{aL}$$

$\tau_\perp$ idem


400 kN



$$F = \frac{M}{L/2}$$

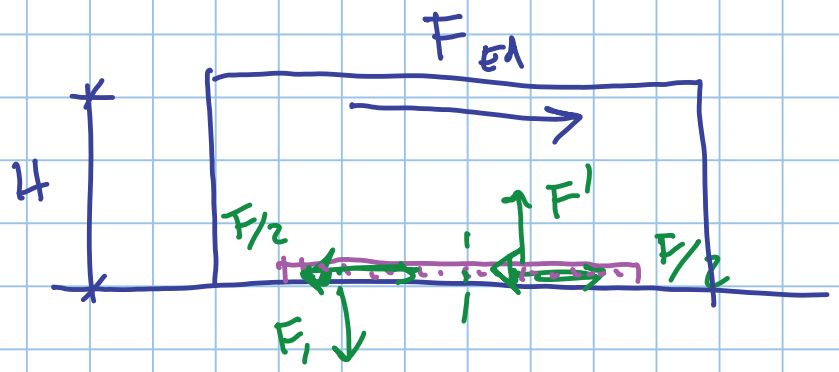
$$\Downarrow$$

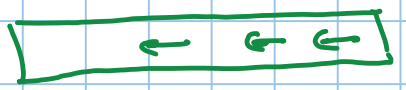
$$\text{da cui} \quad F_M = a\,L/2\,f_{vwd}$$

$$M_{RA} = F_{Rd}\,\frac{L}{2} =$$

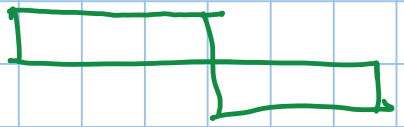
$$= \frac{a\,L^2}{4}\,f_{vwd}$$

$$M = F_{ext} \, H$$





$$\tau_{//} = \frac{F}{a\,L}$$

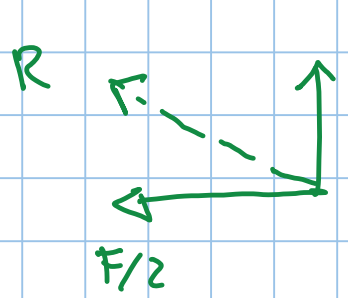


σ_1

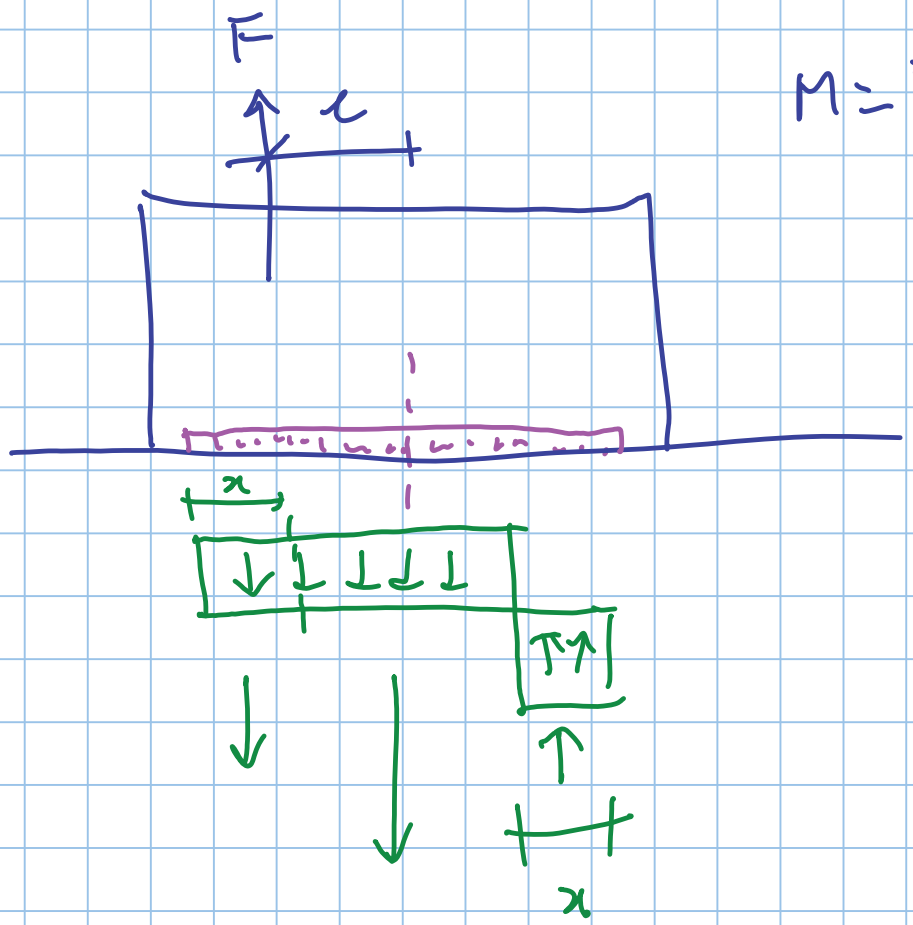
τ_1

$$F' = \frac{M}{L/2}$$

su metà carico



$$R = \sqrt{\left(\frac{F}{2}\right)^2 + F'^2}$$



$M = Fe$