

# ACCIAIO pu c.a.

Titolo nota

19/03/2014

B450 C

$f_y = 450 \text{ MPa}$

ad adherenza  
migliorata

Fe B44 K

$f_y = 430 \text{ MPa}$

"

Fe B 38 K

$f_y = 375 \text{ MPa}$

"

Fe B 32 K

$f_y = 315 \text{ MPa}$

liscia

Fe B 28 K

$f_y = 275 \text{ MPa}$

"

B 450 C

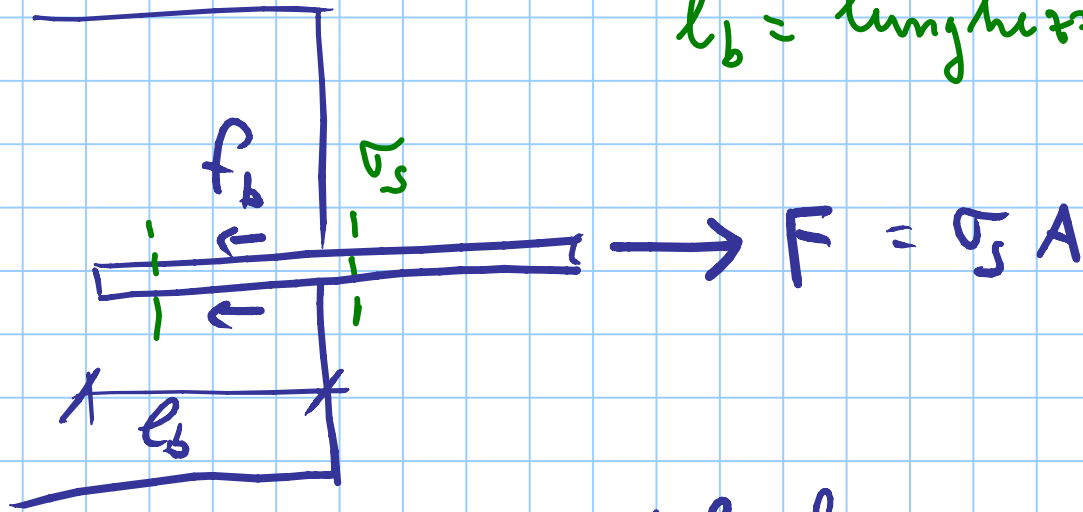
$$f_{yk} = 450 \text{ MPa}$$

$$f_{yd} = \frac{f_{yk}}{\gamma_s} = \frac{450}{1.15} = 391.3 \text{ MPa}$$

$$E_s = 200\,000 \text{ MPa}$$

$f_b$  tensioni di aderenza

$l_b$  = lunghezza di ANCORAGGIO



$$\underbrace{\pi \phi l_b f_b}_{\text{forza di aderenza}} = \sigma_s \frac{\pi \phi^2}{4}$$

$\phi$  = diametro della barra

forza  
di aderenza

$$l_b = \frac{\sigma_s}{4 f_b} \phi$$

$$f_{bk} = 2.25 f_{ctk}$$

barre ad adesione migliorate

condizioni di adesione buone

$$\phi \leq 32 \text{ mm}$$

C25/30

$$f_{ctk} = 1.80 \text{ MPa}$$

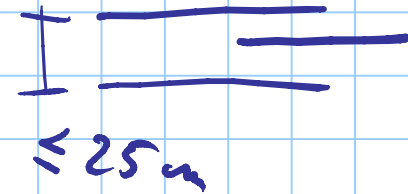
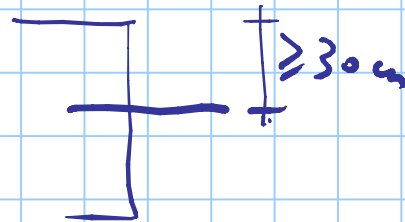
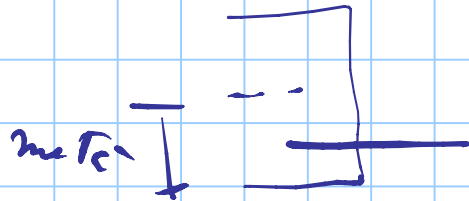
$$f_{bk} = 4.05 \text{ MPa}$$

$$f_{bd} = 2.7 \text{ MPa}$$

$$l_b = \frac{\sigma_s}{4 f_{bd}} \phi \rightarrow f_{yd} = \frac{391.3}{4 \times 2.7} \phi = 36.2 \phi \approx 40 \phi$$

condizioni di aderenza

BUONE



NON BUONE

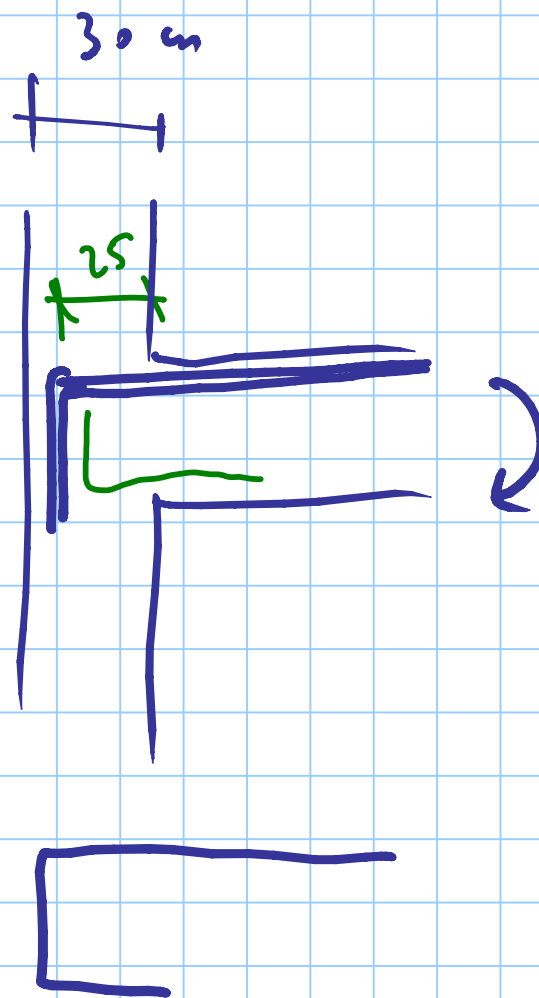
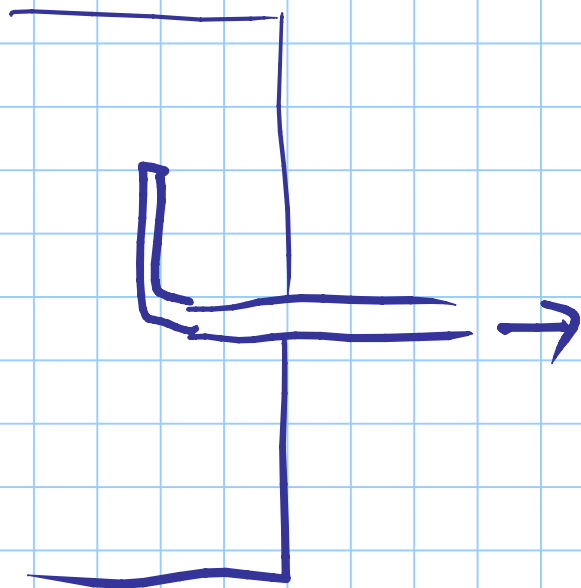
$$f_{bh} = 0.7 \times 2.25 f_{ctk}$$

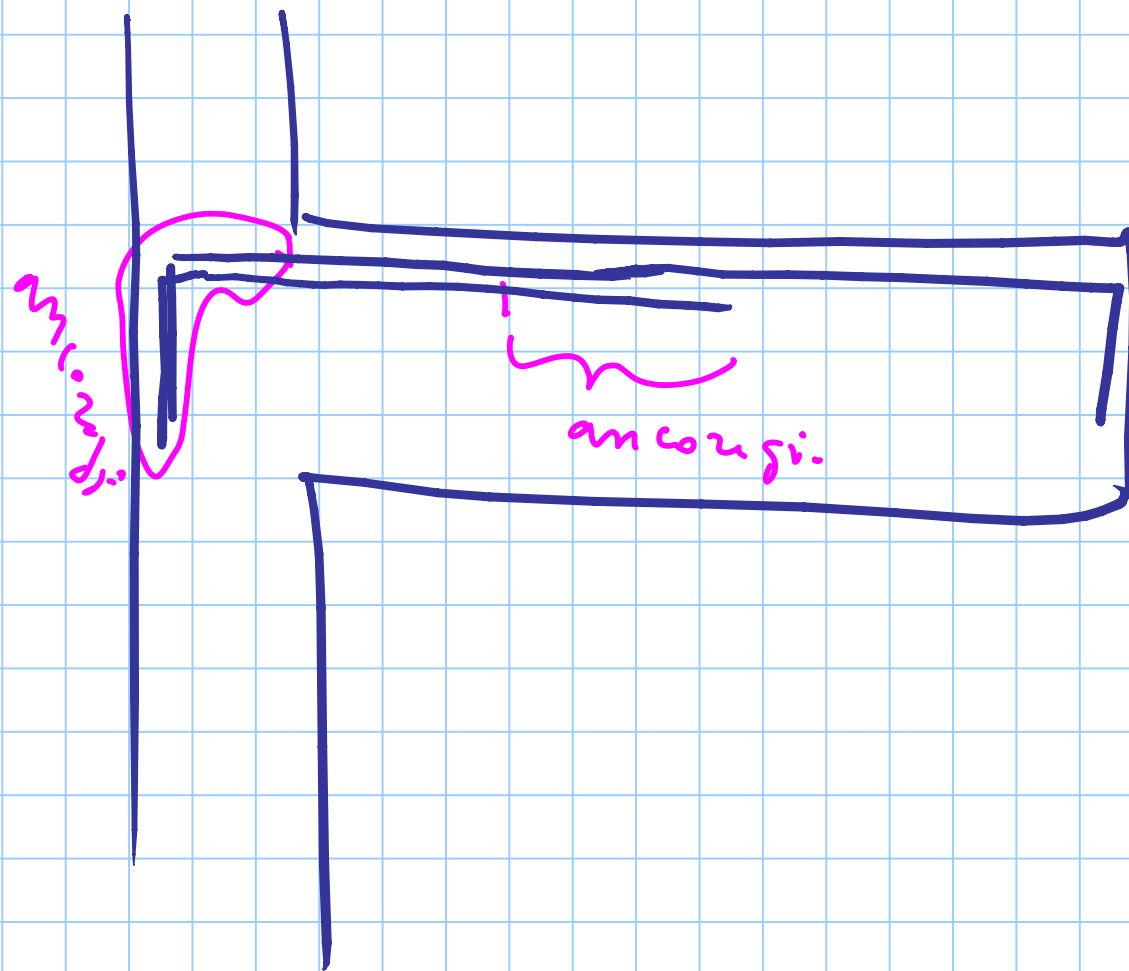
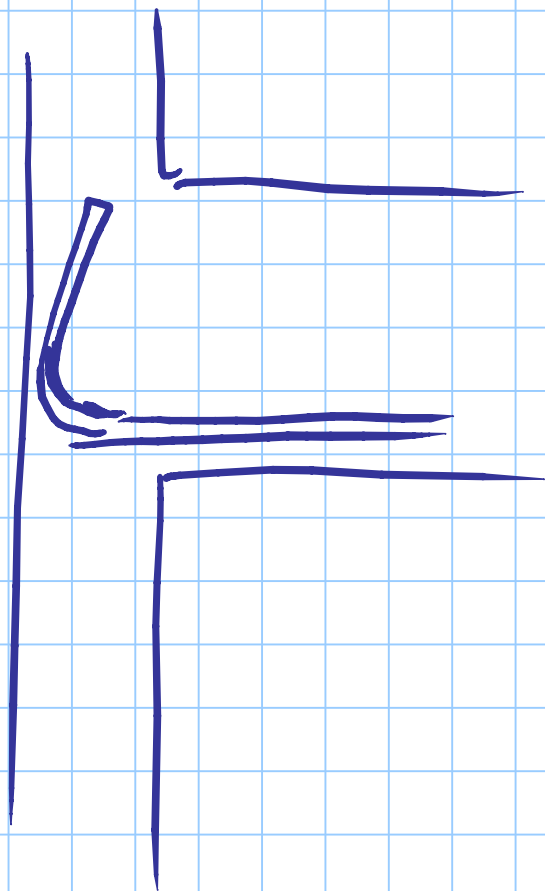
↑

attenti a:

○  $\phi > 32 \text{ mm}$

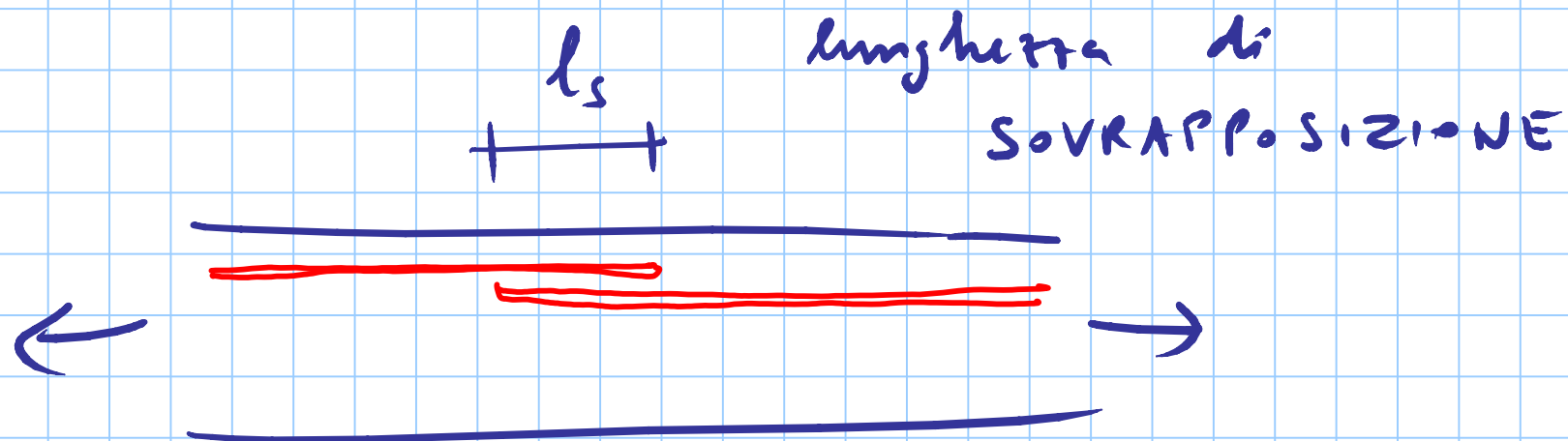
∞ superficie di sfilamento minore







# SOVRAPPOSIZIONE



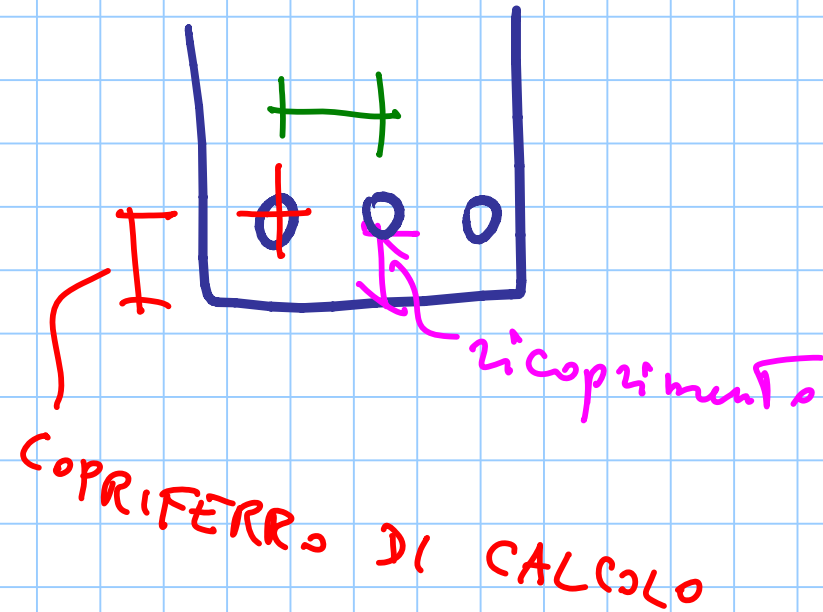
$$l_s \approx l_b$$

se molte barre si sovrappongono  
insieme:

AUMENTARE  $l_s$

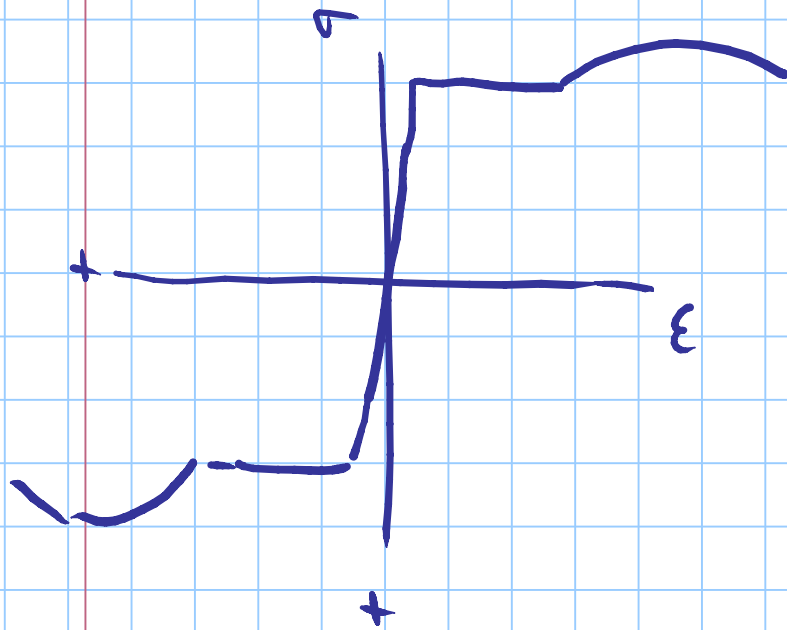
SOVRAPPORRE DOVE LAVORANO MENO

# RICOPRIMENTO

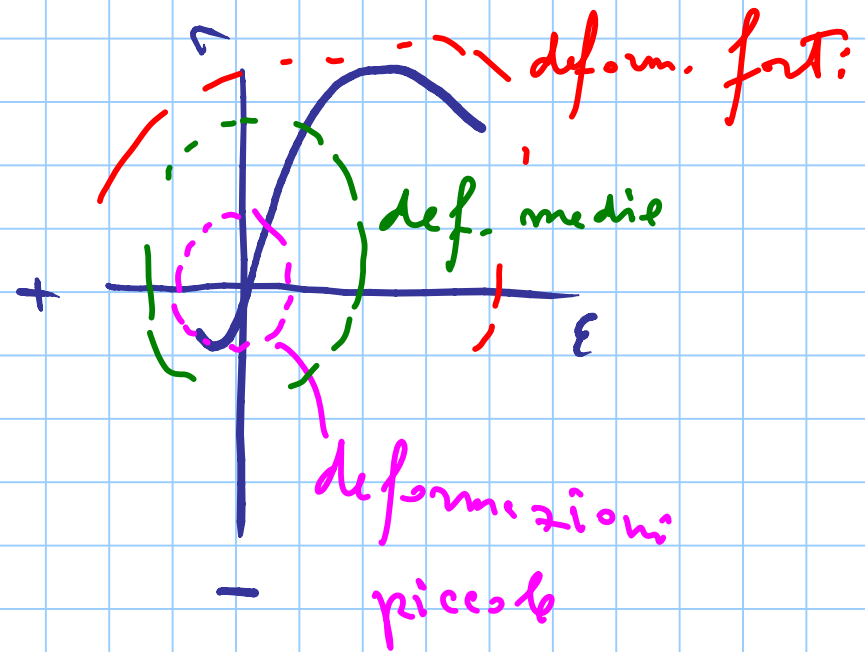


# MODELLI PER IL CEMENTO ARMATO

ACCIAIO

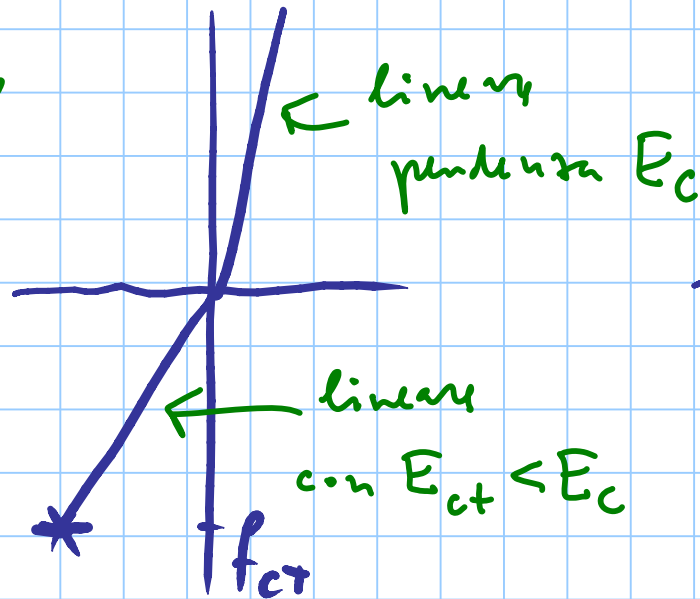
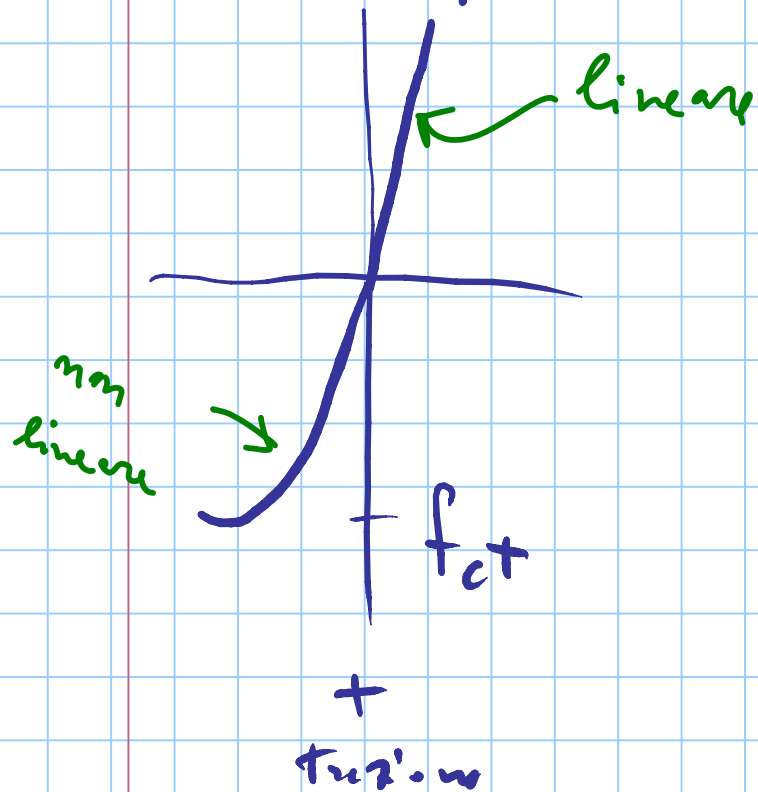


CALCESTRUZZO

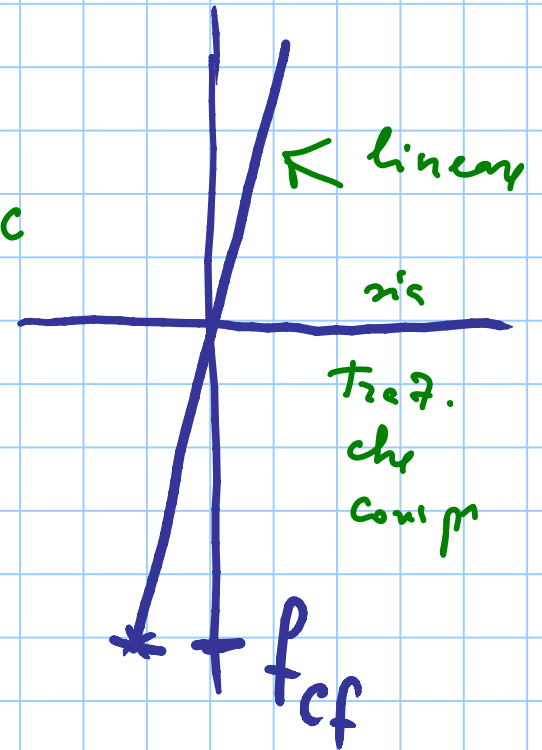


deformazioni molto piccole  
modell. del punt.

- compressione



OGF1



# 1° MODELLO DI COMPORTAMENTO (1° STADIO)

per deformazioni molto basse

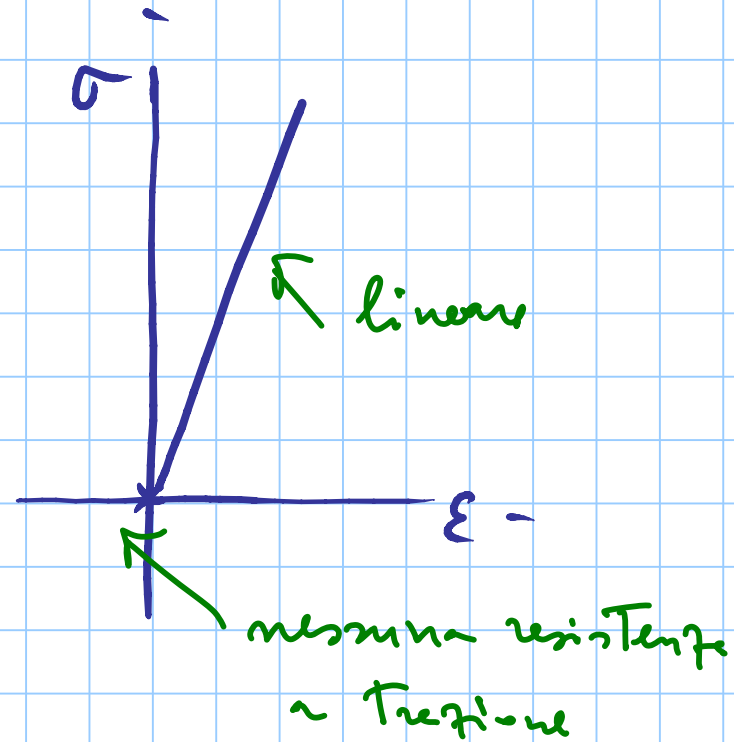
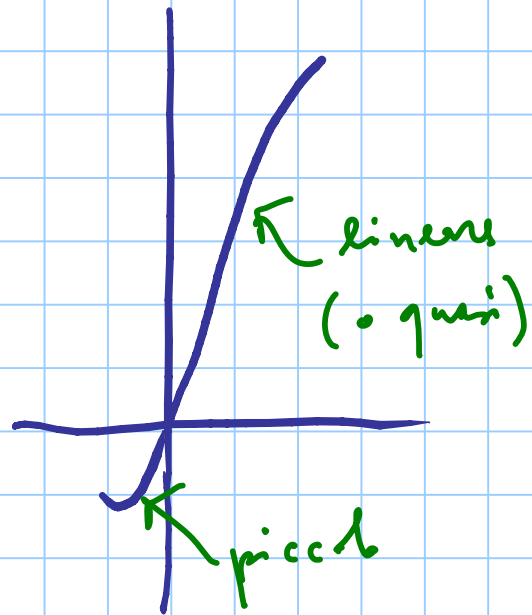
$$\text{per } \sigma_{ct} \leq f_{cf} \text{ o } f_{ct}$$

MODELLO ELASTICO LINEARE

sia a trazione che a compressione

# deformazioni elastiche

- compression

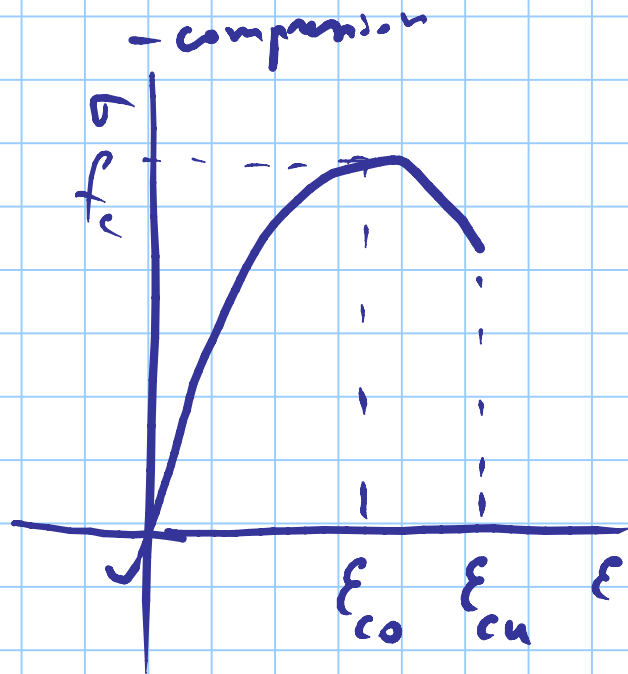


## 2° MODELLO DI COMPORTAMENTO. (2° STADIO)

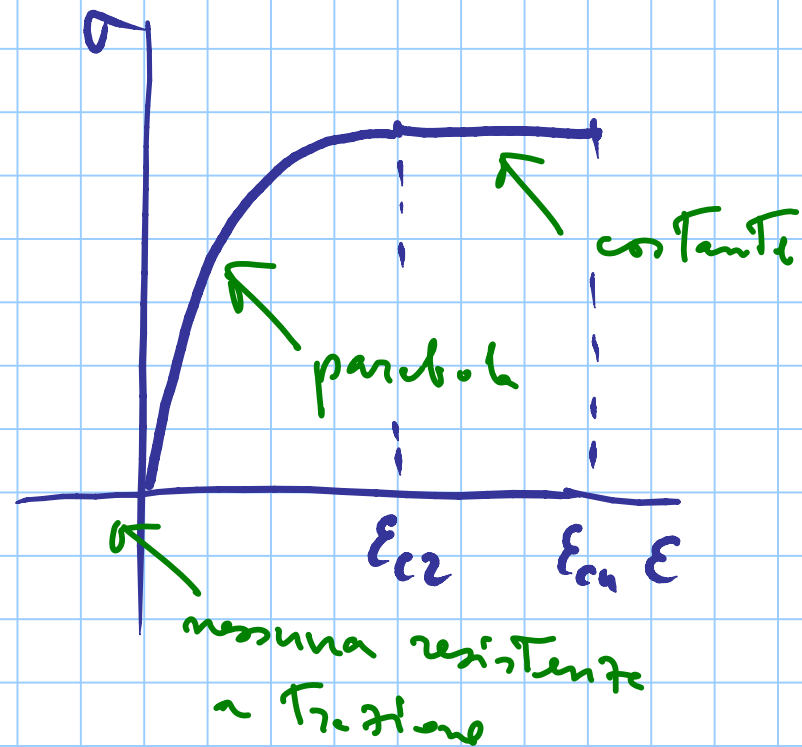
deformazioni medie

- COMPORTAMENTO ELASTICO LINEARE  
A COMPRESSIONE
- NESSUNA RESISTENZA A TRAZIONE

deformazioni più alte



SPERIMENTALE

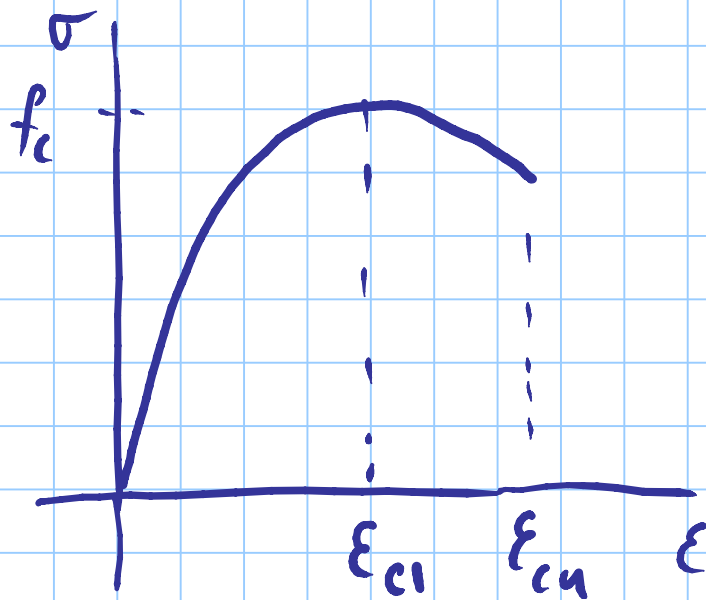


"PARABOLA-RETTANGOLO"

usato per verifiche SLV



## ALTRE POSSIBILITA'



studi di SARGIN

con semplificazioni di EC2

suggerito per calcolo  
duttilità

altre, per calcolo duttilità:

KENT, PARK

MANDER

importante distinguere

- ricoprimento
- parte confinata

DUTTILITA'

### 3° MODELLO DI COMPORTAMENTO (3° STADIO)

deformazioni alte, fino a rottura

MODELLO NON LINEARE (A COMPRESSIONE)

CALCESTRUZZO NON RESISTENTE A TRAZIONE