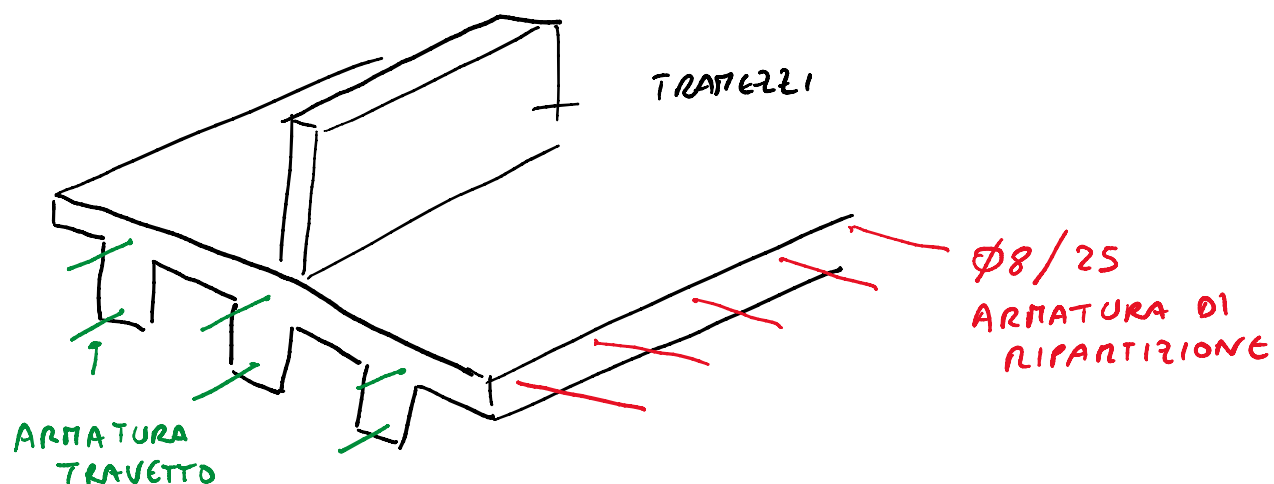


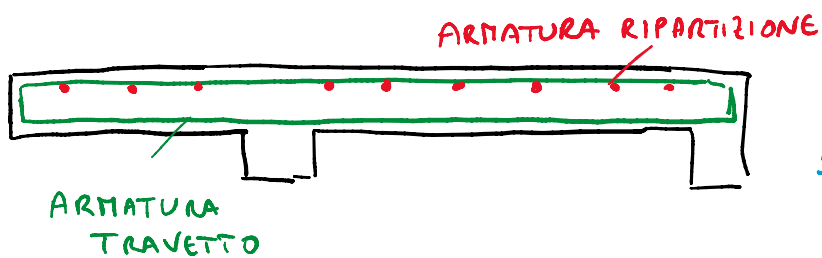
ARMATURA DI RIPARTIZIONE

giovedì 14 maggio 2020 15:28

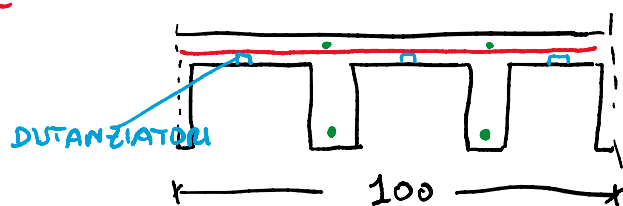


SOLAIO CON 3 TRAVETTI AL METRO

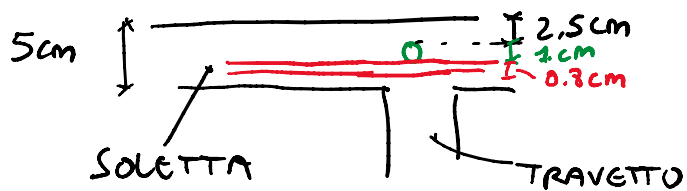
SEZIONE LONGITUDINALE TRAVETTO



SEZIONE TRASVERSALE

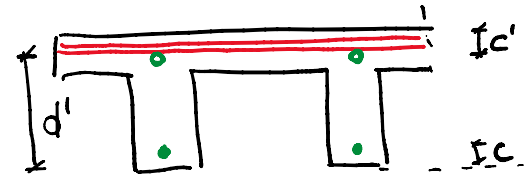
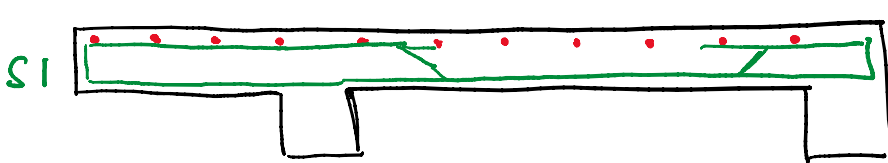
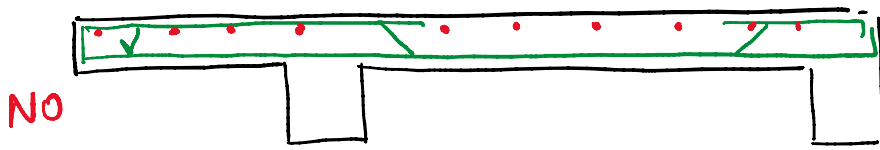


INGRANDIMENTO



SOLAIO CON 2 TRAVETTI AL METRO (BARRE SAGONATE)

SEZIONE LONGITUDINALE TRAVETTO

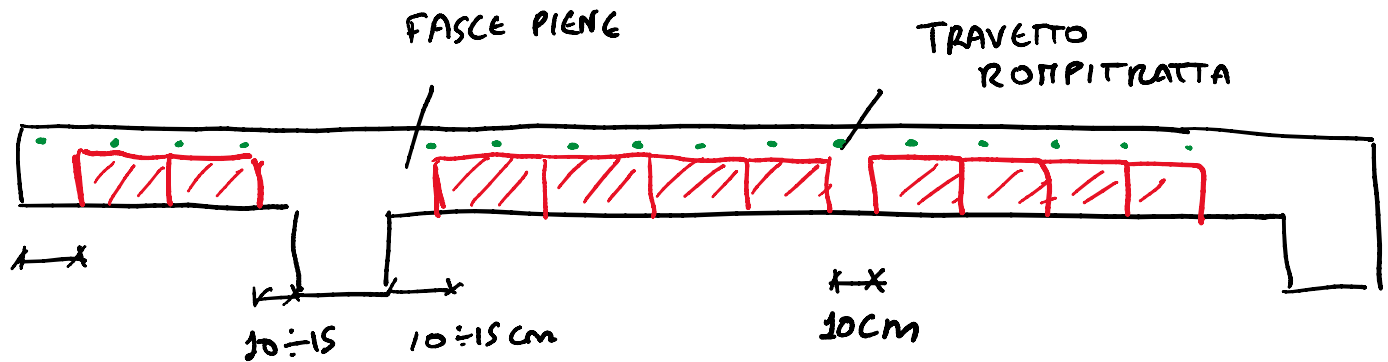


$c' > c \Rightarrow d' < d$ (d' ENTRA IN GIOCO PER $M_{ed} < 0$)

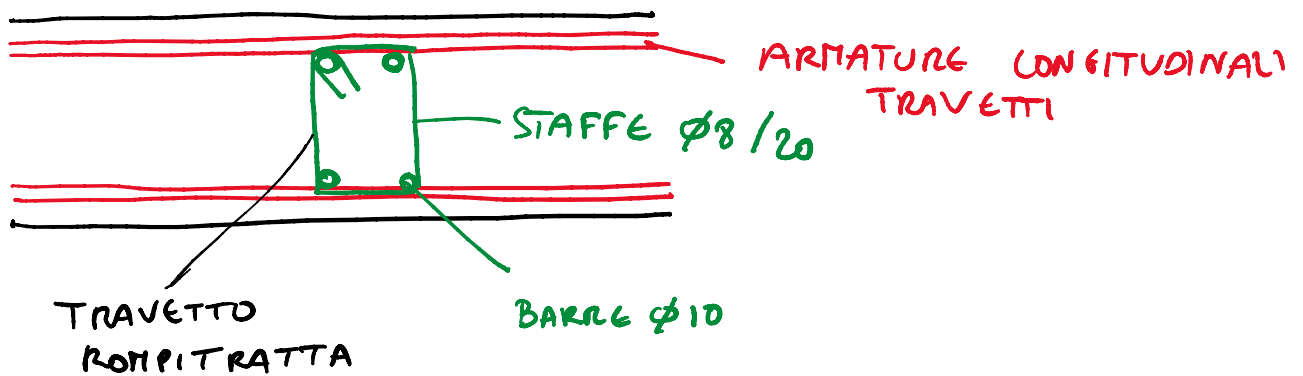
DISPOSIZIONE PIGNATTE E TRAVETTO ROMPIRATTA

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SEZIONE LONGITUDINALE IN CORRISPONDENZA DEL LATERIZIO



TRAVETTO ROMPIRATTA NECESSARIO SE $L \geq 4,50$ m

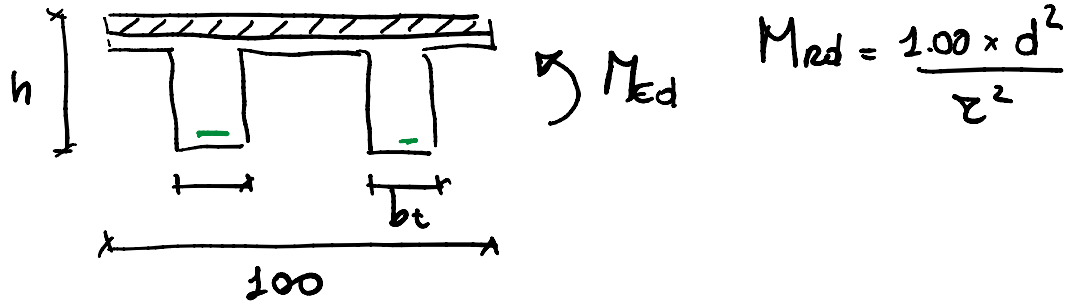


MOMENTO RESISTENTE DEL CLS

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$$M_{rd} = \frac{b d^2}{\gamma^2} \quad (\text{CAUTELATIVO})$$

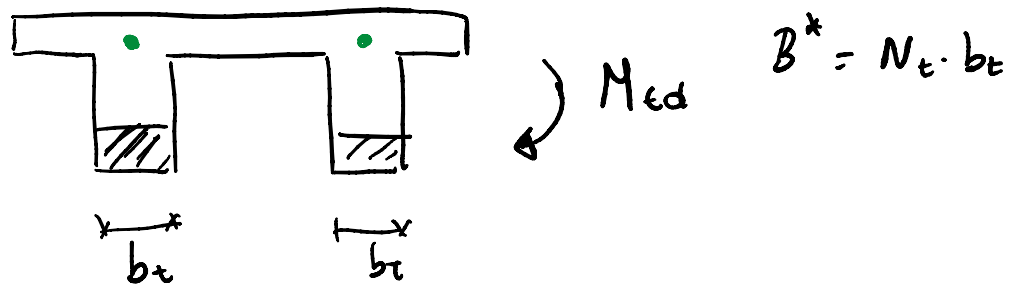
SE $M_{ed} > 0$



NEL NOSTRO CASO $h_s = 23 \text{ cm} \rightarrow d = 20 \text{ cm}$

$$M_{rd} = \frac{1 \times 0,2^2}{0,0197^2} = 103,07 \text{ kNm}$$

SE $M_{ed} \leq 0$

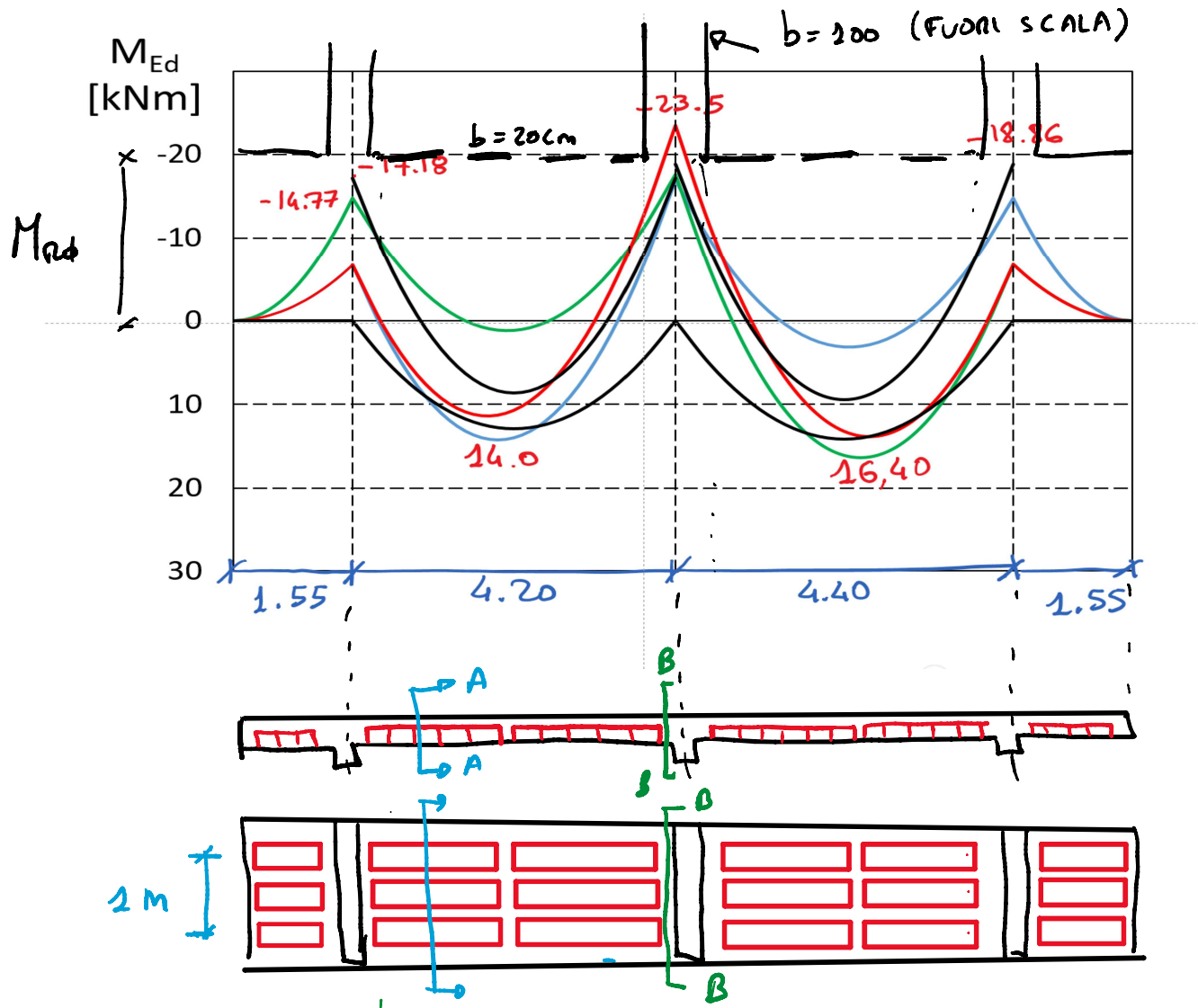


NEL CASO DI 2 TRAVETTI AL METRO $B^* = 2 \times 10 = 20 \text{ cm}$

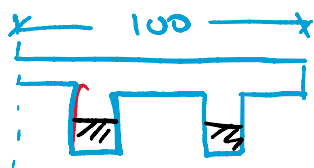
$$M_{rd} = \frac{0,20 \times 0,20^2}{0,0197^2} = 20,62 \text{ kNm}$$

DIAGRAMMA DEL MOMENTO RESISTENTE DEL CLS

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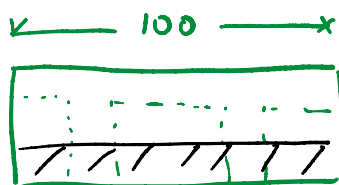


SEZIONE A-A (2 TRAVETTI ALM)



$$\rightarrow M_{Ed} \quad b = 2 \times 10 \text{ cm} \rightarrow M_{Ed} = \frac{0.20 \times d^2}{0.0197^2}$$

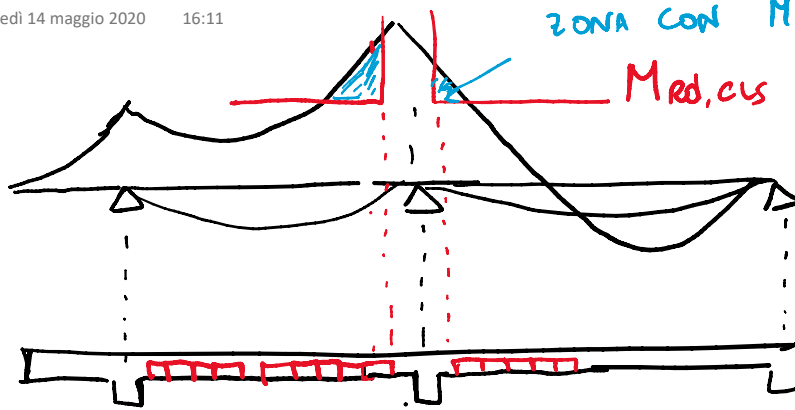
SEZIONE B-B (FASCIA PIENA)



$$\rightarrow M_{Ed} \quad b = 100 \text{ cm} \rightarrow M_{Ed} = \frac{1 \times d^2}{0.0197^2}$$

FASCE SEMIPIENE

giovedì 14 maggio 2020 16:11

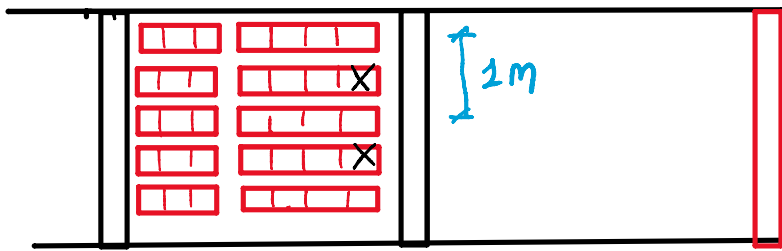


zona con $M_{ed} > M_{rd,cl}$

$M_{rd,cl}$

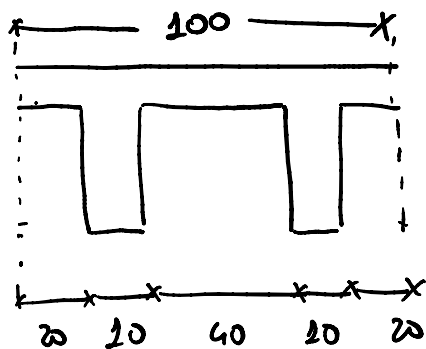
SE $M_{ed} > M_{rd,cl} \Rightarrow$

CONSIDERO FASCIA SEMIPIENA

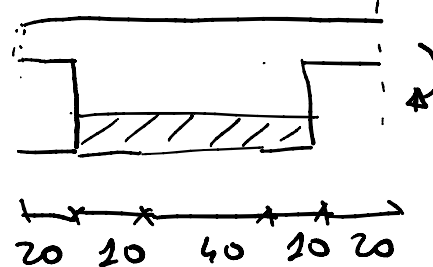


X = PIGNATTE DA ELIMINARE

PER SOLAIO DA 2 TRAVETTI AL METRO HO :



FASCIA SEMIPIENA

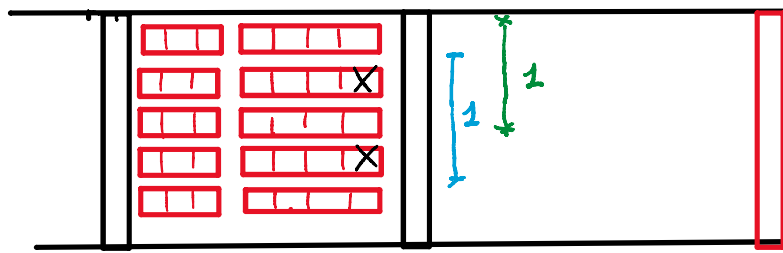


$$b = b_t \times N_t + 1 \text{ PIGNATTA}$$

$$b = 60 \text{ cm}$$

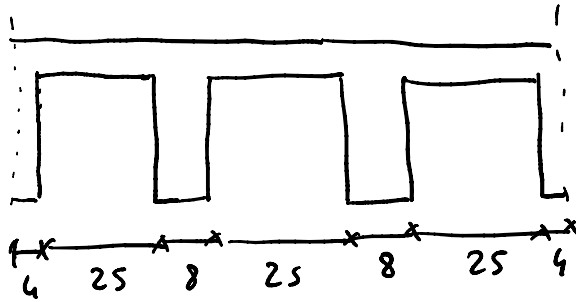
IN CORRISPONDENZA DELLA FASCIA SEMIPIENA

$$M_{rd} = \frac{0,60 \text{ m} \times d^2}{0,0197^2} = \frac{0,60 \times 0,20^2}{0,0197^2} = 62,87 \text{ kNm}$$



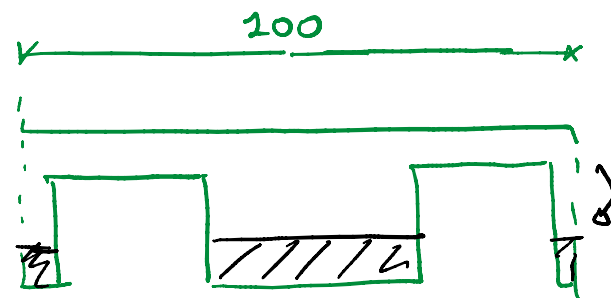
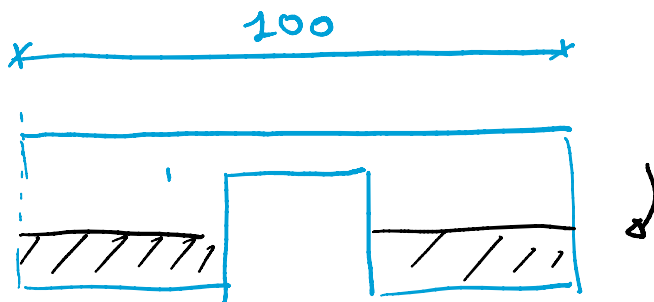
X = PIGNATTE DA
ELIMINARE

PER SOLAIO CON 3 TRAVETTI AL METRO



ELIMINO $1 + \frac{1}{2}$ PIGNATTA
AL m \Rightarrow

$$b = 3 \times 8 + 2.5 \times 25 = 61.5 \text{ cm}$$



VERIFICA A PRESSO (TENSO) - FLESSIONE III STADIO

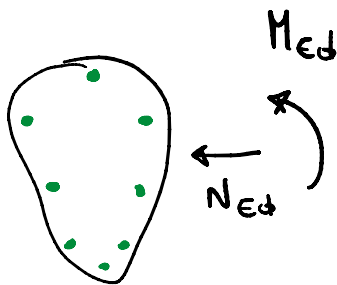
giovedì 14 maggio 2020 16:29

CALCOLARE N_{rd} , M_{rd}

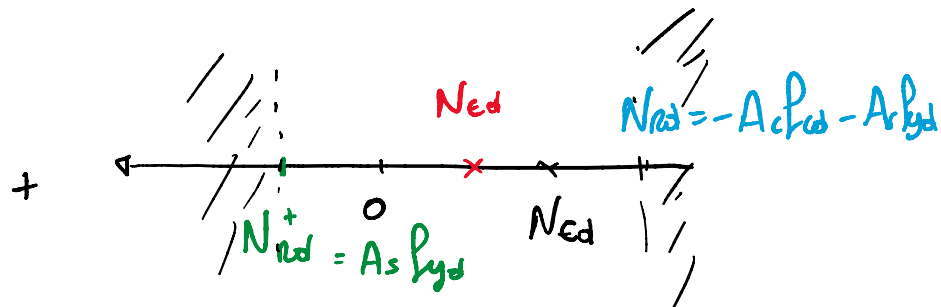
VERIFICARE CHE $N_{rd} = N_{ed} \Rightarrow M_{rd} > M_{ed}$

COPPIE $N_{rd} - M_{rd}$ SONO LIMITE $\rightarrow \epsilon = \epsilon_{LIMITE}$
DEFORMAZIONE $\epsilon = \epsilon_{LIMITE}$ IN ALMENO UN PUNTO DI CLS

SEZIONE GENERICA SOGGETTA A N_{ed} , M_{ed}

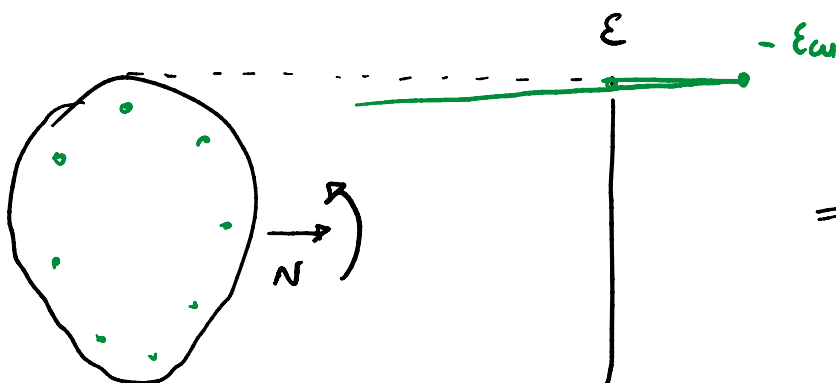


1. VERIFICO CHE N_{ed} SIA SOSTENIBILE



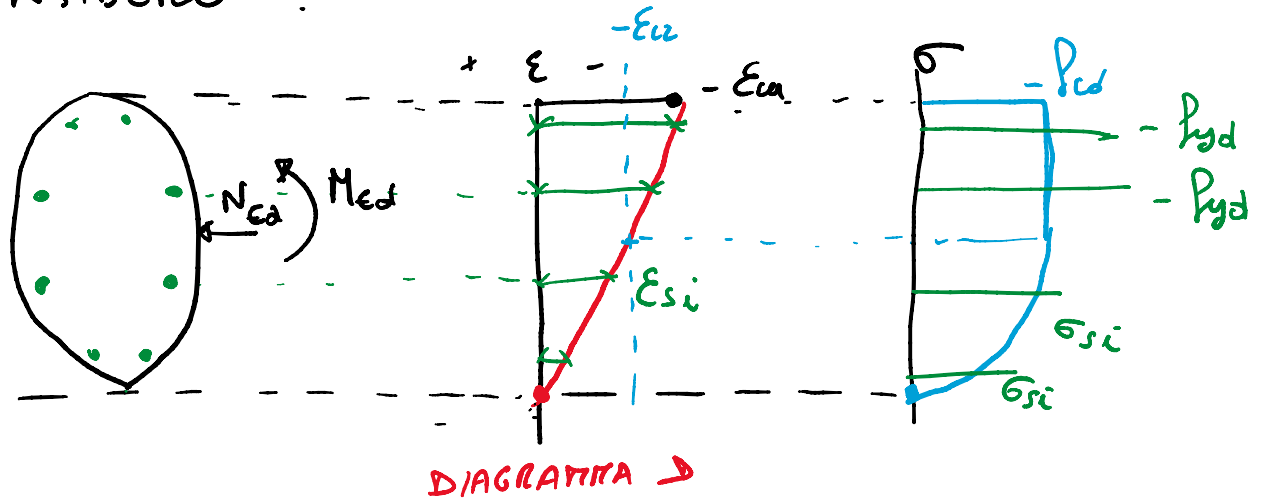
2. DEVO INDIVIDUARE SE LA SEZIONE E' PARZIALIZZATA

NOTA: IN CASO DI TRAZIONE IL DIAGRAMMA LIMITE PARTE COMUNQUE DA $-\epsilon_{cu}$ \Rightarrow SE N MOLTO FORTE $x \rightarrow 0$

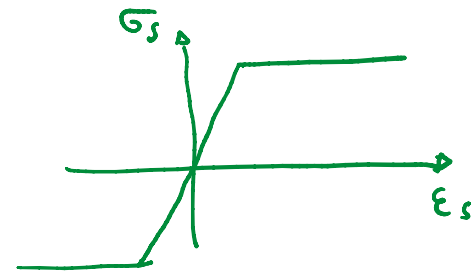


$$\Rightarrow \epsilon_{si} \Rightarrow \infty$$

PER CAPIRE SE LA SEZIONE È PARZIALIZZATA
CONSIDERO :



$$\sigma_{si} = \begin{cases} \epsilon_{si} E_s & \text{se } |\epsilon_{si}| \leq \epsilon_{yd} \\ -\sigma_{yd} & \text{se } |\epsilon_{si}| > \epsilon_{yd} \end{cases}$$

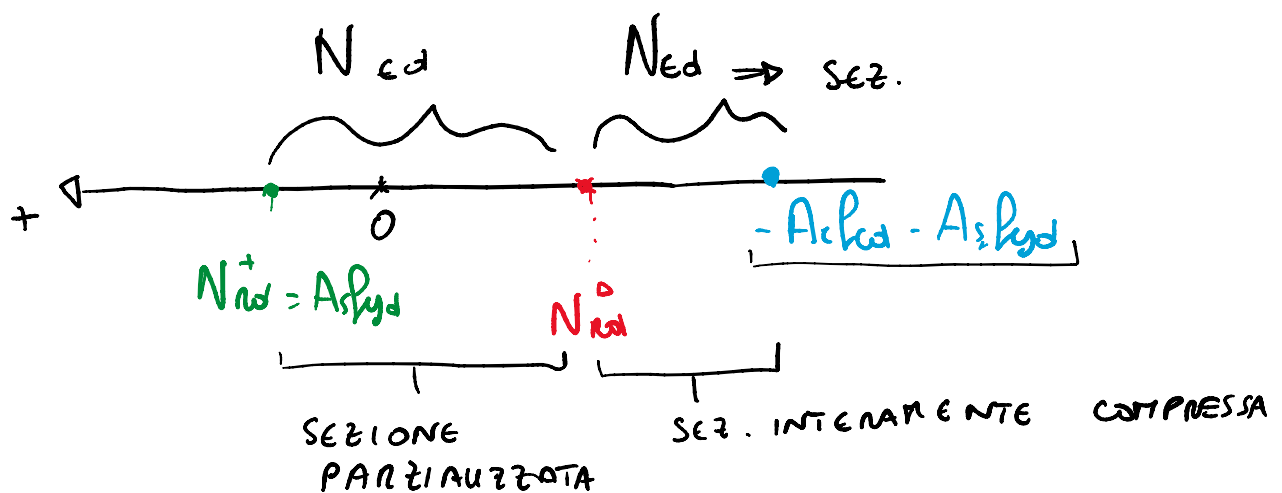


$$N_{si} = A_{si} \cdot \sigma_{si}$$

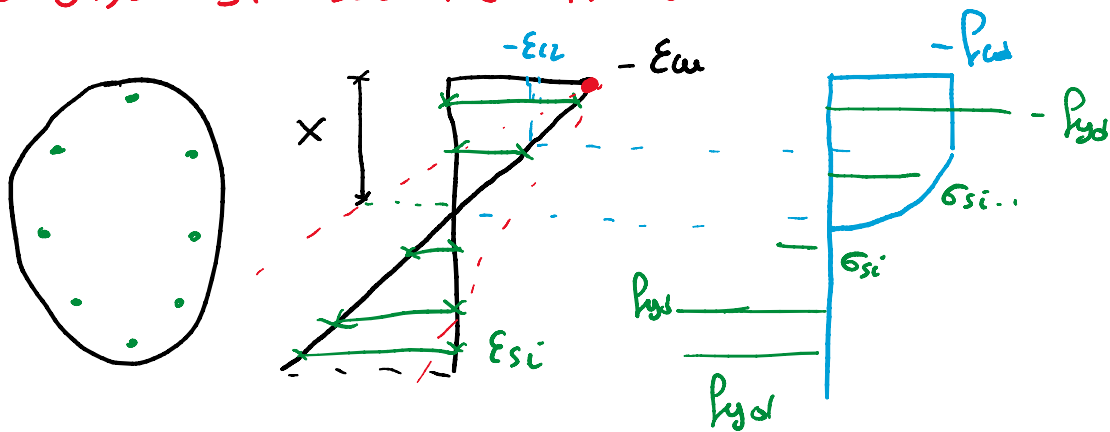
$$N_c = \int \sigma dA_c = -A_c \cdot \sigma_{cu} \cdot \beta$$

$$\Rightarrow N = N_c + \sum N_{si}$$

\downarrow
 N_{rd}



NEL CASO DI SEZIONE PARZIALIZZATA



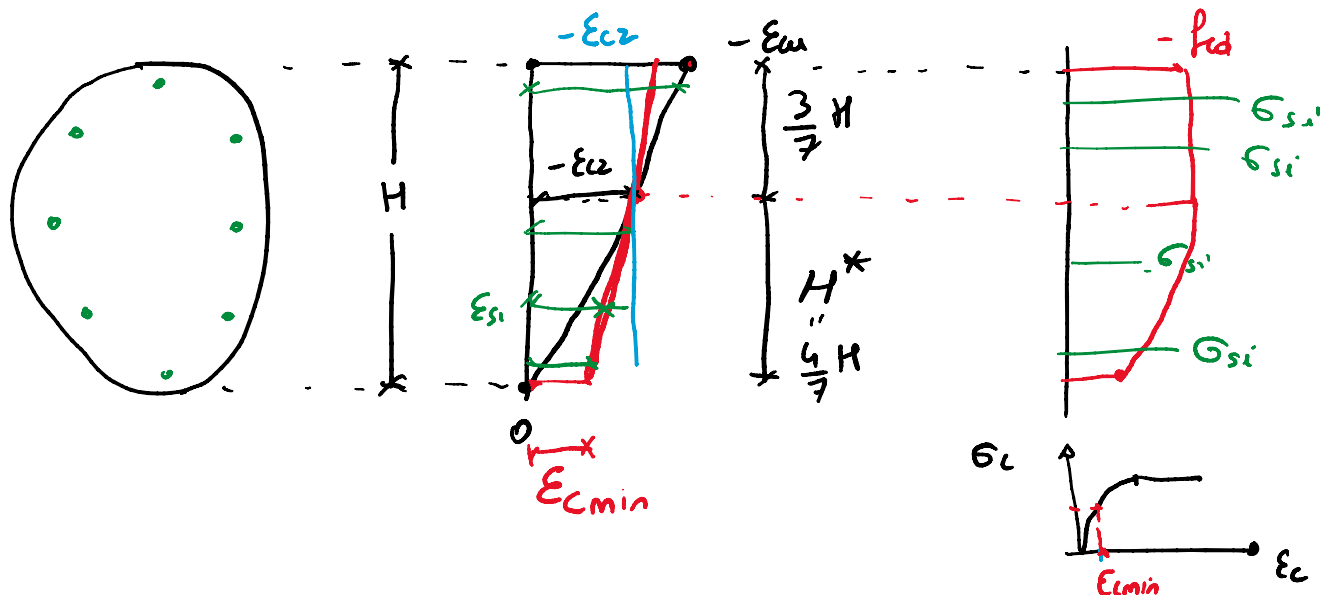
FISSO $\epsilon = -\epsilon_{cu}$ (BORDO COMPRESSO)

IPOTEZZO $x \rightarrow$ CALCOLO $N_{Rd} = N_c + \sum N_{si}$

MODIFICO x FINO A QUANDO $N_{Rd} = N_{Ed}$

CASO PARTICOLARE FLESSIONE SEMPLICE $N_{Ed} = 0$

SEZIONE INTERAMENTE COMPRESSA



$$-\epsilon_{c2} : H^* = -\epsilon_{cu} : H \rightarrow H^* = \frac{-\epsilon_{c2}}{-\epsilon_{cu}} \cdot H = \frac{2}{3.5} \cdot \frac{1000}{1000} H = \frac{4}{7} H$$

FISSO DIAGRAMMA LIMITE CON PERNO IN $\xi = -\xi_{c2}$ A DISTANZA $\frac{3}{7}H$ DAL BORDO MAGGIORMENTE COMPRESSO

VARIO ξ_{cmin} FINO A QUANDO $N_{Rd} = N_{Ed}$

$$-\xi_{c2} \leq \xi_{cmin} \leq 0$$

$$\text{POSTO } \eta = \frac{\xi_c}{-\xi_{c2}} \Rightarrow$$

$$\text{Se } \xi_{cmin} = 0 \Rightarrow \eta_{min} = 0$$

$$\text{Se } \xi_{cmin} = -\xi_{c2} \Rightarrow \eta_{min} = 1 \Rightarrow 0 \leq \eta_{min} \leq 1$$

NOTO IL DIAGRAMMA LIMITE \Rightarrow

CALCOLO M_{Rd} (EQUILIBRIO ALLA ROTAZIONE RISPETTO AD O.)