

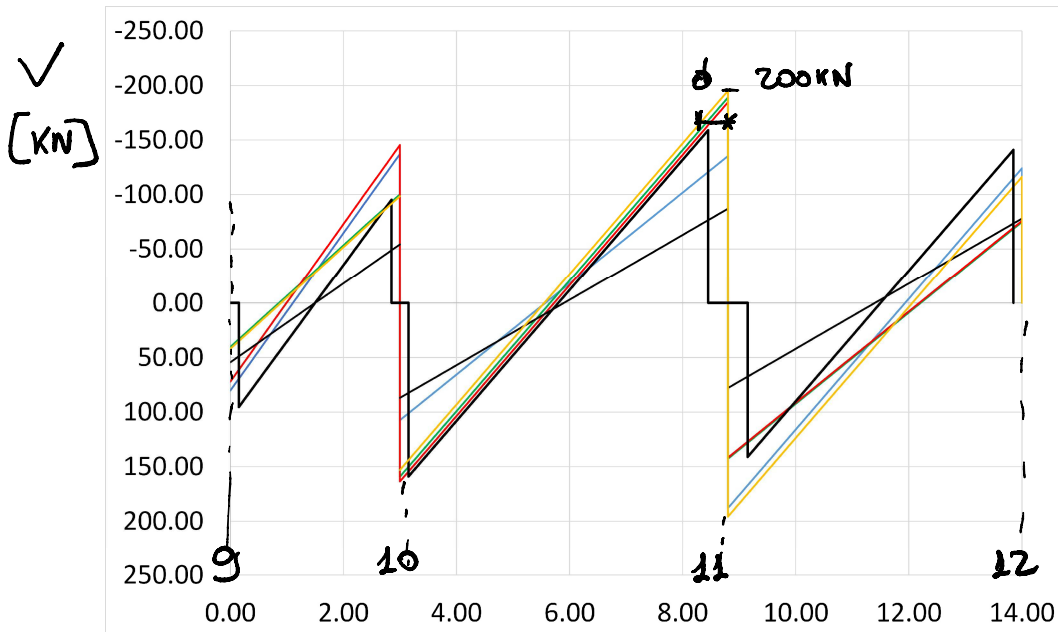
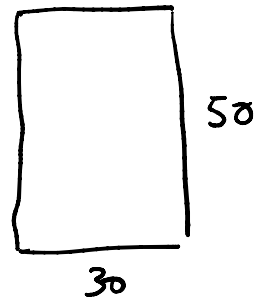
PROGETTO ARMATURE A TAGLIO : TRAVE EMERGENTE

mercoledì 10 giugno 2020 13:59

DAL DIMENSIONAMENTO A FLESSIONE

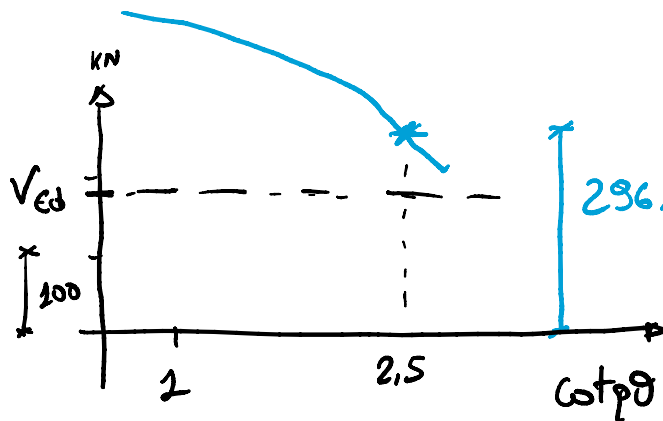
C25/30 ; $c = 5\text{cm}$

B450C



V_{ed} MISURATO
A DISTANZA d
DA APPOGGIO

↓
 $\approx 175\text{ kN}$



$$V_{red} = \underbrace{b_w \cdot z}_{\text{Area}} \cdot \underbrace{f_{ctd}}_{\frac{b}{c_e \cdot 1}} \cdot \frac{\cot \theta}{1 + \cot^2 \theta}$$

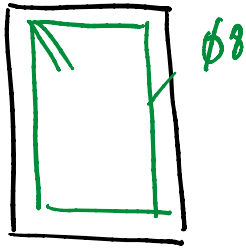
$$V_{red} = \text{cm}^2 30 \times 0,9 \times 45 \times 0,5 \times 14,17 \frac{\text{N}}{\text{mm}^2} \times \frac{1}{10} \times \frac{\cot \theta}{1 + \cot^2 \theta}$$

se $\cot \theta = 2,5$ $V_{red} = 296,8 \text{ kN} \Rightarrow$

$V_{ed} \leq V_{red}$ PER TUTTI I VALORI DI $\cot \theta$

PER PROGETTARE LE STAFFE FISSO $\cot \theta = 2 \Rightarrow$

PER PROGETTARE LE STAFFE FISSO $\cot \vartheta = 2 \Rightarrow$
 UTILIZZO $\phi 8$ $n_b = 2 \Rightarrow V_{Rsd} = n_b \frac{A_{st}}{s} \cdot z \cdot f_{yd} \cdot \cot \vartheta$



$$S \leq \frac{n_b A_{st} \cdot z \cdot f_{yd} \cdot \cot \vartheta}{V_{Ed}}$$

$$S \leq \frac{2 \times 0,5 \text{ cm}^2 \times 0,9 \times 45 \text{ cm} \times 391,3 \frac{\text{N}}{\text{mm}^2}}{175 \text{ kN}} \cdot 2 =$$

$$= 18,1 \text{ cm} \Rightarrow$$

OPZIONE 1 : FISSO $\phi 8/15$

OPZIONE 2 : FISSO $\phi 8/20 \Rightarrow$ CERCO $\cot \vartheta$:

$$V_{Ed} = V_{Rsd} (\cot \vartheta)$$

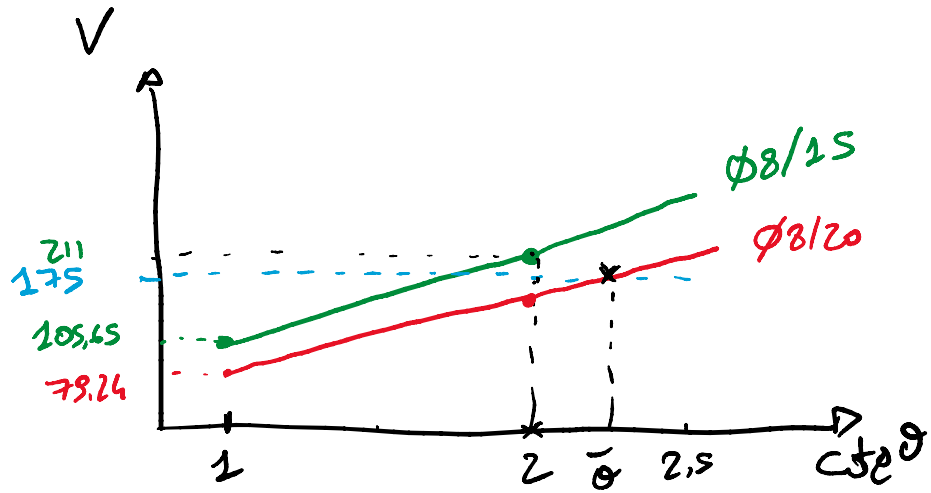
COSTRUZIONE DEL GRAFICO :

$$\text{SE HO } \phi 8/15 \Rightarrow V_{Rsd} = \frac{2 \times 0,5 \text{ cm}^2}{15 \text{ cm}} \times 0,9 \times 45 \text{ cm} \times \frac{391,3 \text{ N}}{10 \text{ mm}^2} \times \cot \vartheta$$

$$= 105,65 \cot \vartheta$$

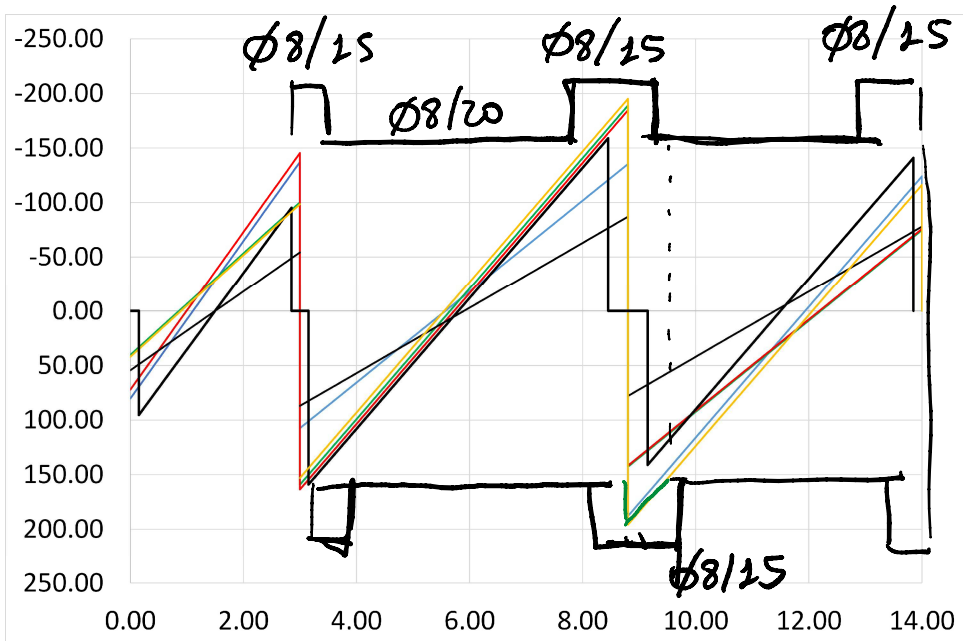
$$\text{SE HO } \phi 8/20 \Rightarrow V_{Rsd} = \frac{2 \times 0,5 \text{ cm}^2}{20 \text{ cm}} \times 0,9 \times 45 \times \frac{391,3}{20} \cot \vartheta$$

$$= 79,24 \cot \vartheta$$

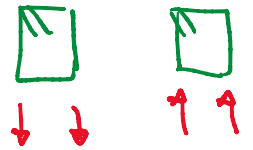


OPZIONE 3 DISPONGO ARMATURA SECONDO MINIMI DI NORMATIVA IN CAMPATA ($\phi 8/20$) E RAFFITTISCO AGLI ESTREMI

$\phi 8/20 \rightarrow \text{con } \cot \varphi = 2 \Rightarrow 158.5 \text{ kN}$



RESISTENZA A TAGLIO INDIPENDENTE DAL SEGNO DI V



PROGETTO ARMATURA DI PARETE

mercoledì 10 giugno 2020 14:30

$$A_{sp} = \frac{V}{2} \frac{\cot \theta}{f_{yd}}$$

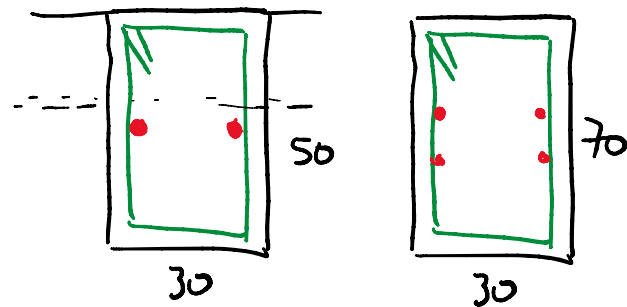
$$\text{Se } \cot \theta = 2 \Rightarrow A_{sp} = \frac{V}{2} \cdot \frac{2}{f_{yd}} = \frac{175 \text{ kN}}{381,3 \text{ N}} \text{ mm}^2 \times 10$$

$$\Rightarrow A_{sp} = 4,47 \text{ cm}^2$$

METTO 0 $2+2 \phi 14$

oppure $1+1 \phi 20$

↓

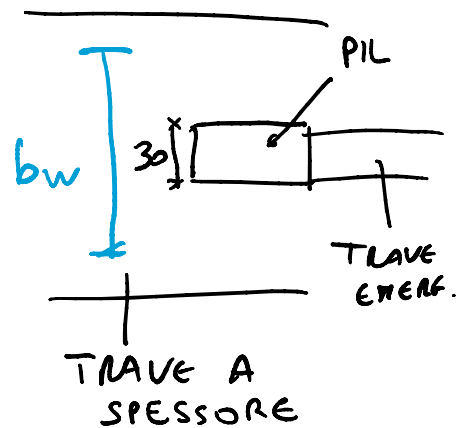
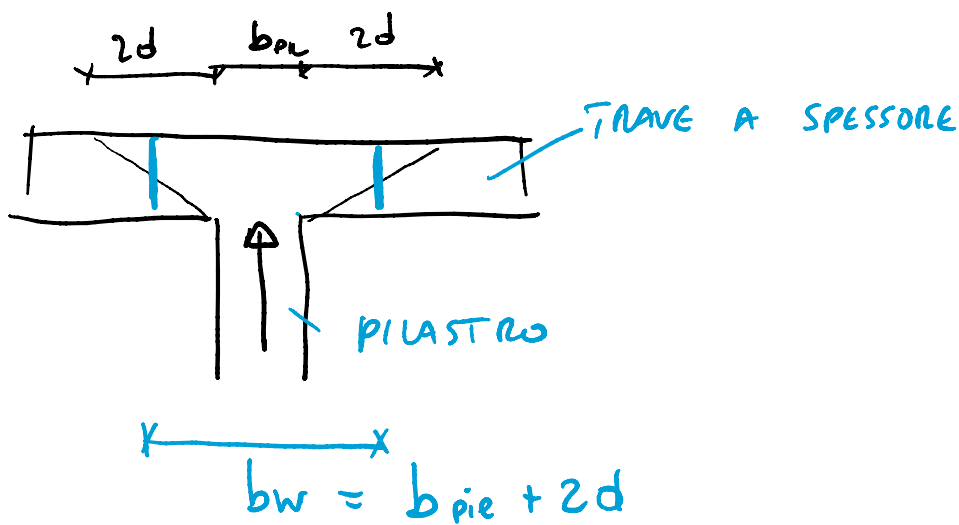
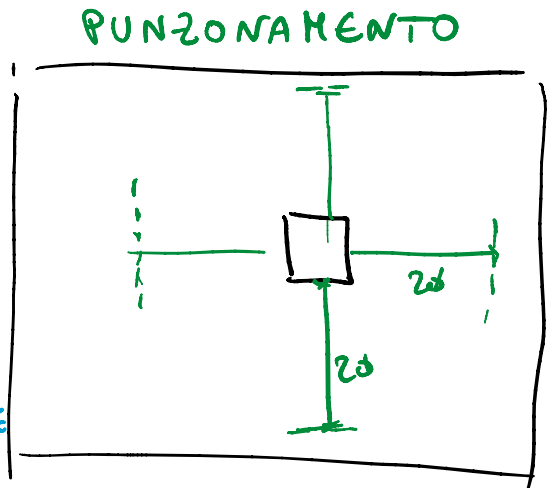
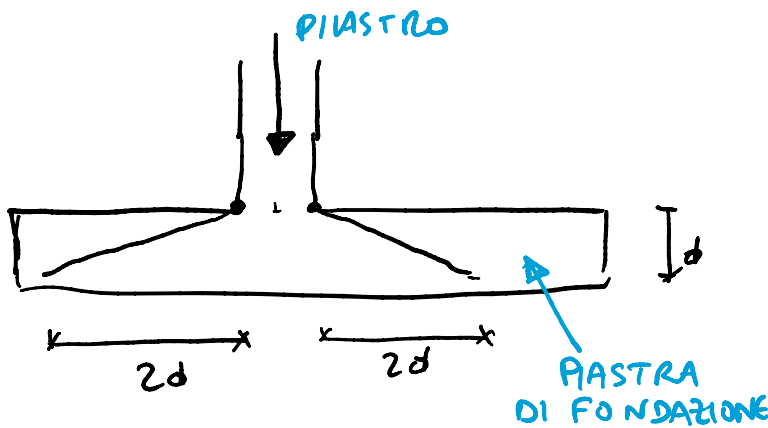


EVITO TRASLAZIONE DEL DIAGRAMMA DEI MOMENTI

SE NON METTO ARMATURA DI PARETE, SE LA
METTO FUORI CALCOLO O SE METTO MENO DEL
NECESSARIO \Rightarrow TRASLAZIONE DI $\frac{z}{2} \cdot \cot \theta$

PROGETTO PER TRAVE A SPESSORE

mercoledì 10 giugno 2020 14:37

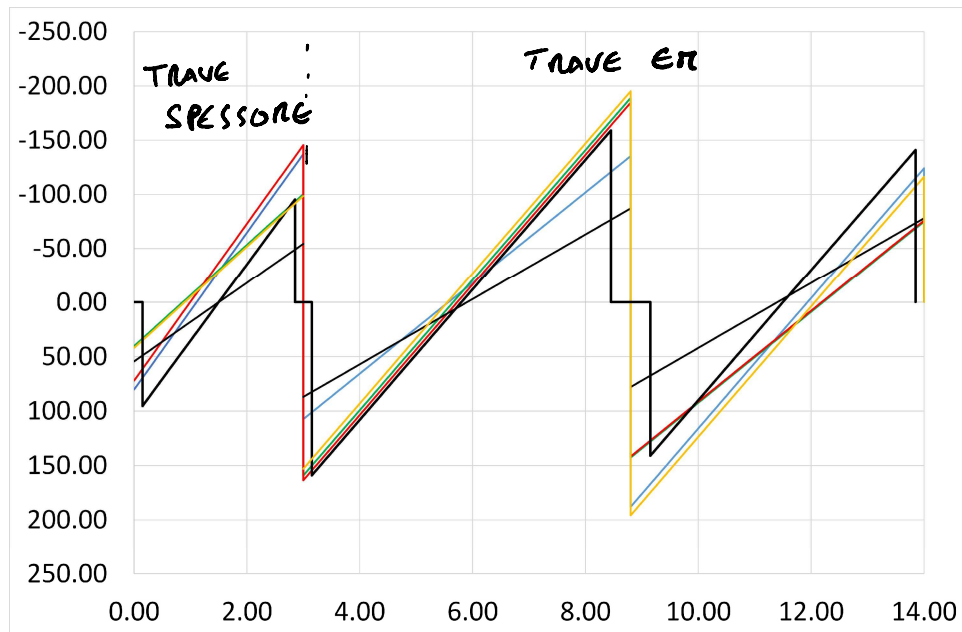


$$b_w = 30 + 2 \times 18 \text{ cm} = 66 \text{ cm}$$

IL NOSTRO SOLAIO HA $H \approx 23 \text{ cm}$

$$\text{CALCOLO } V_{rcl} = \frac{66 \text{ cm}}{b_w} \times \frac{0,9 \times 18}{z} \times 0,5 \times 16,17 \frac{\text{N}}{\text{mm}^2} \times \frac{1}{10} \times \frac{\cot \varphi}{1 + \cot^2 \varphi}$$

$$\text{se } \cot \varphi = 2,5 \Rightarrow V_{rcl} = 261,2 \text{ kN}$$



$$V_{red} > V_{ed}$$

$$\checkmark \text{ ok}$$

CALCOLO ARMATURA NECESSARIA

- $n_b \frac{A_{se}}{s} \geq 0.15 b_w \frac{\text{cm}^2}{\text{m}}$

STAFFE CON $n_b = 4 \rightarrow \frac{4 \times 0.5 \text{ cm}^2}{s} \geq 0.15 \times 66 \frac{\text{cm}^2}{\text{m}}$

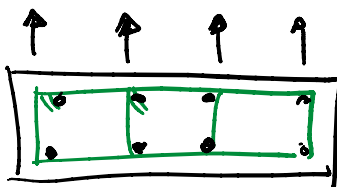
$$s \leq \frac{2 \text{ cm}^2}{0.15 \times 66 \text{ cm}^2} \text{ m} = 0.2 \text{ m} \Rightarrow \phi 8/20 \quad 4 \text{ br.}$$

- $s \leq 0.8d \Rightarrow 0.8 \times 18 = 14.4 \text{ cm}$

SE $\phi 8/10 \quad n_b = 4 \Rightarrow V_{rsd} = \frac{4 \times 0.5 \text{ cm}^2}{10} \cdot 0.9 \times 18 \text{ cm} \times \frac{331.3 \text{ N}}{10 \text{ mm}^2} \cdot \omega_p \theta$

$\omega_p \theta = 2$

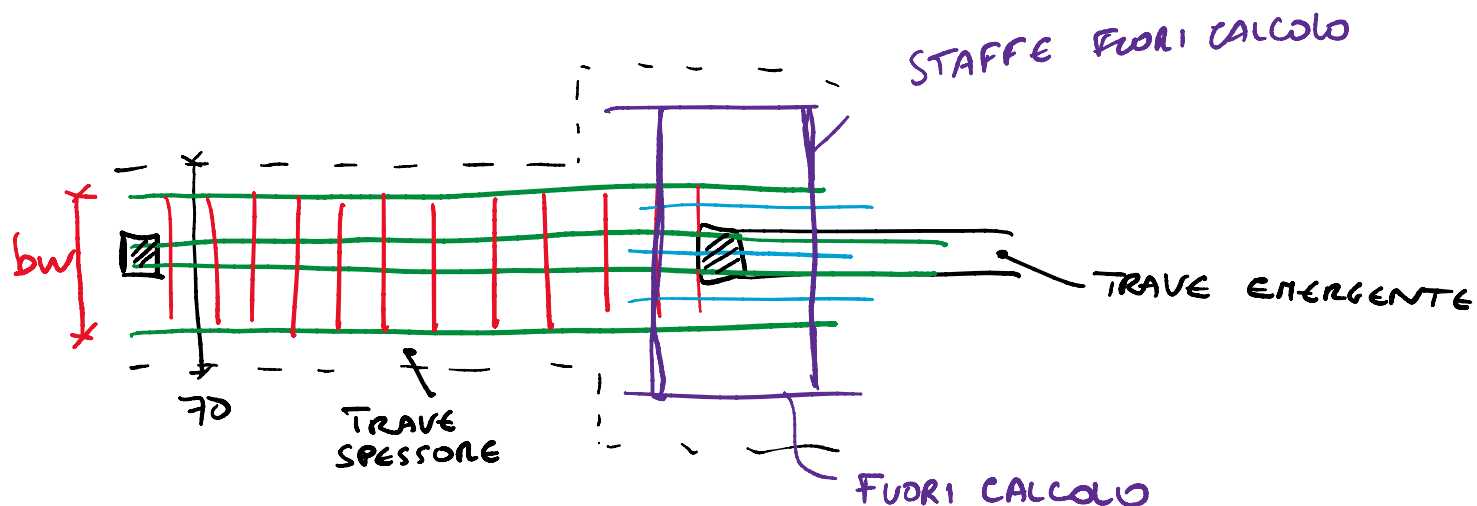
$$V_{rsd} = 253.56 \text{ kN}$$



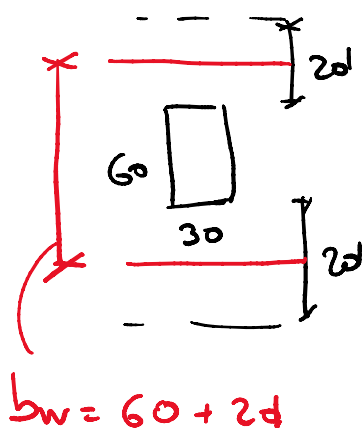
SE $\phi 8/14 \Rightarrow V_{rsd} = 181.2 \text{ kN}$

DISPOSIZIONE ARMATURE NELLA TRAVE A SPESSORE

mercoledì 10 giugno 2020 14:56



ALTRI CASI



TRAVE ECCENTRICA (MEGLIO EVITARE)

