

- TRAVE : $\left\{ \begin{array}{l} \text{PROG. A } V_{ed} \checkmark \\ \text{TAVOLA} \checkmark \end{array} \right.$

- VERIFICA A V_{ed} DEL SOLAIO

- CARPENTERIA \checkmark

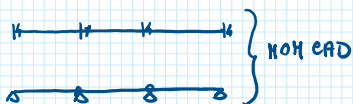
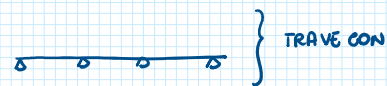
TRAVE

1) INVILUPPO V_{ed}

2) VERIFICARE LA SEZ. IN CLS

3) PROG. ARMATURA A V_{ed}

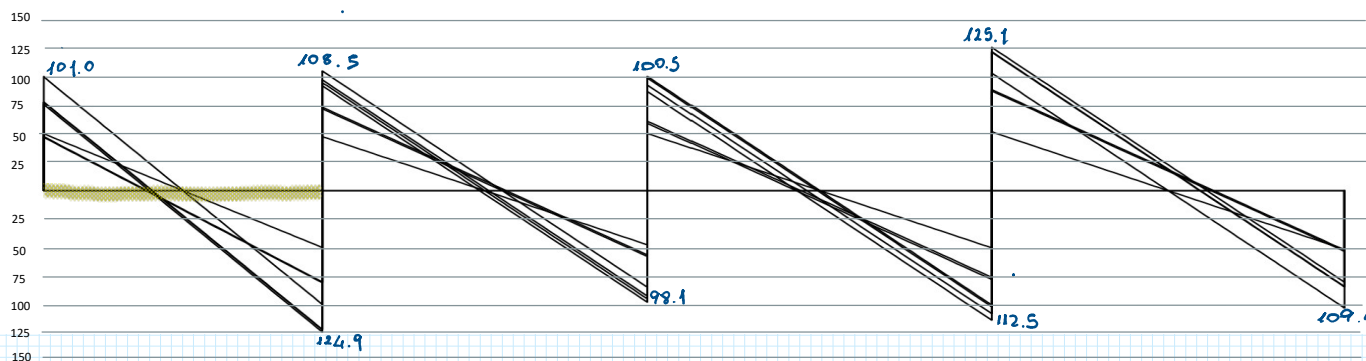
1) INVILUPPO V_{ed}



INVILUPPO V_{ed}

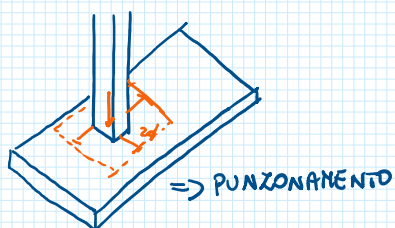
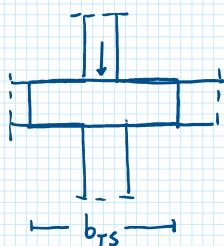
SCALA LUNGHEZZE 1 : 20

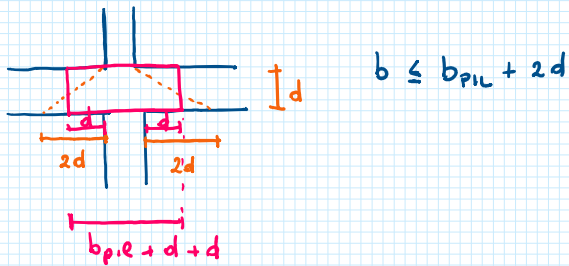
SCALA DEI V 1 cm = 25 kN



2) VERIFICA DELLA SEZ. IN CLS

$$V_{Rdmax} = 0.9 d \cdot b \cdot f_{cd} \cdot \alpha_c \cdot \frac{\cot \theta}{1 + \cot^2 \theta}$$

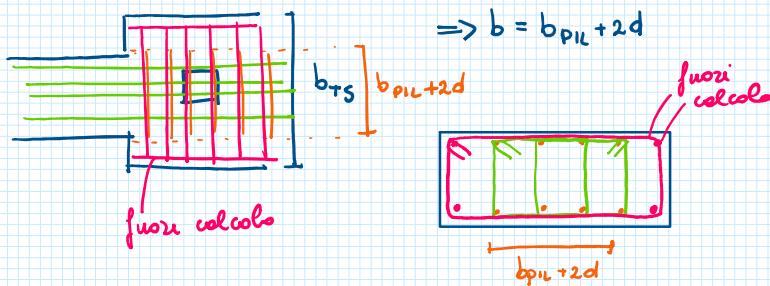




1) $b_{TS} \leq b_{pil} + 2d$



2) $b_{TS} > b_{pil} + 2d$



VERIFICO LA TRAVE EMERGENTE:

$$V_{Rdmax} = 0.9 \cdot 45 \cdot 30 \cdot 0.5 \cdot 14.17 \cdot \frac{1.0}{10} \cdot \frac{2.5}{1 + 2.5^2} = 296.8 \text{ kN} > V_{Edmax} = 125 \text{ kN}$$

$d = 50 - 5 = 45 \text{ cm}$

VERIFICO LA TRAVE A SPESSORE:

$$b_{pil} + 2d = 30 + 2 \cdot 19 = 68 \text{ cm}$$

$$d = 23 - 4 = 19 \text{ cm}$$

$$b_{TS} = 70 \text{ cm}$$

$$V_{Rdmax} = 0.9 \cdot 19 \cdot 68 \cdot 0.5 \cdot 14.17 \cdot \frac{1.0}{10} \cdot \frac{2.5}{1 + 2.5^2} = 284.9 \text{ kN} > V_{Ed} = 124 \text{ kN}$$

3) PROG. ARMATURE A V_{Ed}

$$\bullet \frac{A_{sw}}{s} \geq 1.5 \frac{b_w}{[mm]} \left[\frac{mm^2}{m} \right]$$

$$\bullet s < 33 \text{ cm}$$

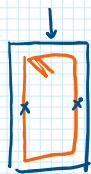
$$\bullet s \leq 0.8 d$$

$$s \leq 12 \phi_{\text{mm, long}} \text{ VICINO AGLI APPOGGI}$$

TRAVE EMERGENTE

$$A_{sw} \geq 1.5 \cdot 300 = 450 \frac{\text{mm}^2}{\text{m}} = 4.5 \frac{\text{cm}^2}{\text{m}}$$

$$\text{uso } \phi_8 \Rightarrow A_{1\phi_8} = 0.5 \text{ cm}^2$$



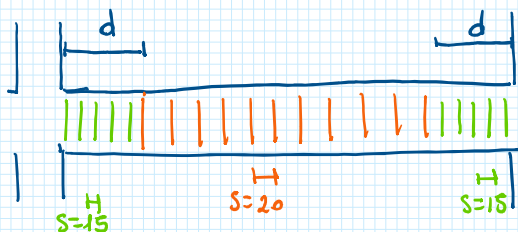
$$A_{sw} = 0.5 \times 2 = 1.0 \text{ cm}^2$$

$$s \leq \frac{A_{sw}}{4.5 \frac{\text{cm}^2}{\text{m}}} = \frac{1.0}{4.5} \frac{\text{cm}^2}{\frac{\text{cm}^2}{\text{m}}} = 0.22 \text{ m} \quad \text{0.20}$$

$$s \leq 33 \text{ cm}$$

$$s \leq 0.8 \times 45 = 36 \text{ cm}$$

$$s \leq 12 \times 1.4 = 16.8 \text{ cm} \quad \text{15 (APPOGGI)}$$



$$\text{IPOTIZZO: } s = 20 \text{ cm}$$

$$s = 15 \text{ cm}$$

$$s = 10 \text{ cm}$$

$$\cot \theta = 2.0$$

$$V_{RdS} = 0.9 \cdot 45 \cdot \frac{2 \cdot 0.5}{s} \cdot \frac{391.3}{10} \cdot 2.0 = \frac{3169.5}{s} \text{ kN}$$

$$s = 20 \text{ cm} \Rightarrow V_{RdS} = \frac{3169}{20} = 158.5 \text{ kN}$$

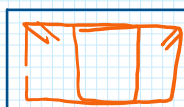
$$s = 15 \text{ cm} \Rightarrow V_{RdS} = \frac{3169}{15} = 211.3 \text{ kN}$$

$$s = 10 \text{ cm} \Rightarrow V_{RdS} = \frac{3169}{10} = 316.9 \text{ kN}$$

TRAVE A SPESSORE

$$A_{sw} \geq 1.5 \cdot 680 = 1020 \frac{\text{mm}^2}{\text{m}} = 10.2 \frac{\text{cm}^2}{\text{m}}$$

$$\text{uso } \phi_8 \Rightarrow A_{1\phi_8} = 0.5 \text{ cm}^2$$



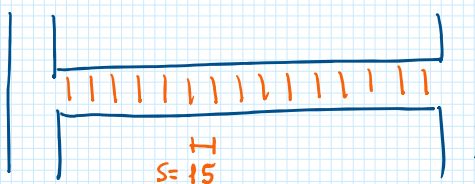
$$A_{sw} = 0.5 \times 4 = 2.0 \text{ cm}^2$$

$$s \leq \frac{A_{sw}}{10.2 \frac{\text{cm}^2}{\text{m}}} = \frac{2.0}{10.2} \frac{\text{cm}^2}{\frac{\text{cm}^2}{\text{m}}} = 0.196 \text{ m}$$

$$s \leq 33 \text{ cm}$$

$$s \leq 0.8 \times 19 = 15.2 \text{ cm} \quad \text{15}$$

$$s \leq 12 \times 1.4 = 16.8 \text{ cm} \quad \text{15}$$



$$\text{IPOTIZZO: } s = 15 \text{ cm}$$

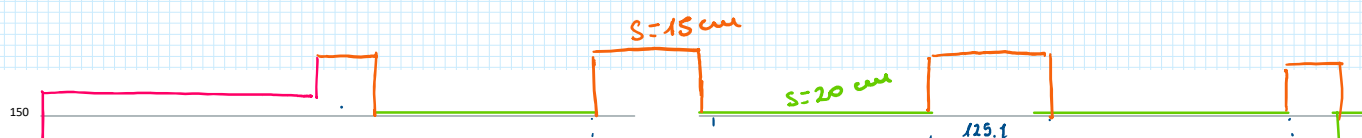
$$s = 10 \text{ cm}$$

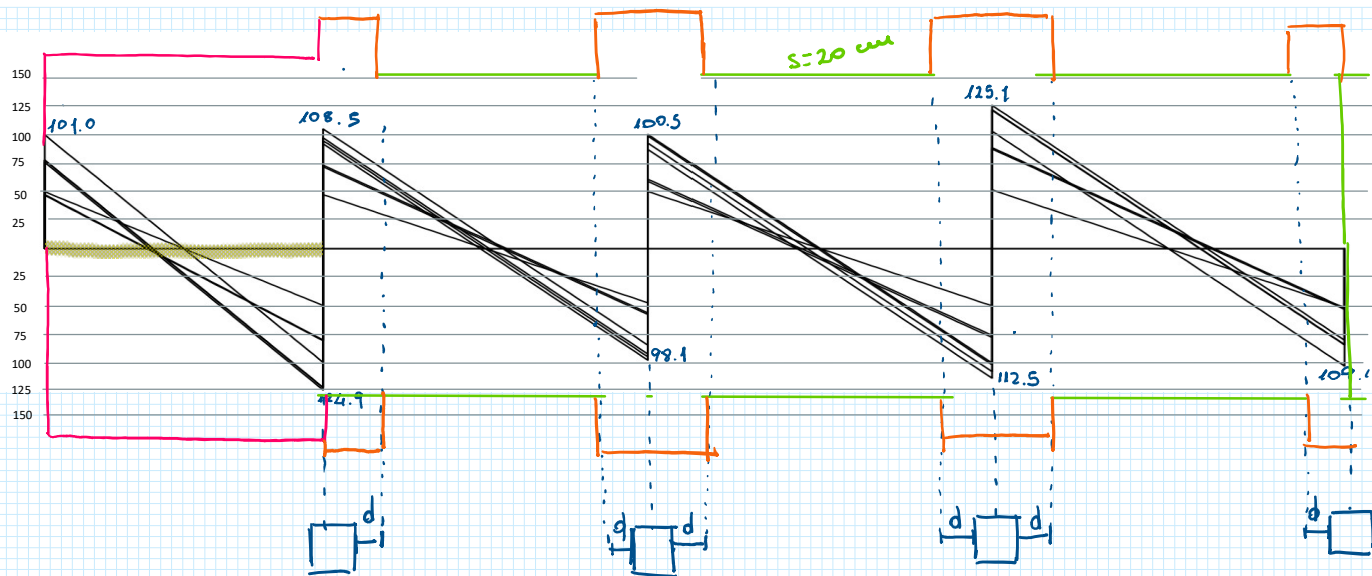
$$\cot \theta = 2.0$$

$$V_{RdS} = 0.9 \cdot 19 \cdot \frac{4 \cdot 0.5}{s} \cdot \frac{391.3}{10} \cdot 2 = \frac{2676.5}{s} \text{ kN}$$

$$s = 15 \text{ cm} \Rightarrow V_{RdS} = \frac{2676.5}{15} = 178.4 \text{ kN}$$

$$s = 10 \text{ cm} \Rightarrow V_{RdS} = \frac{2676.5}{10} = 267.6 \text{ kN}$$





• A parete \Rightarrow TRASL. DEL DIAGR M_{ed} $\Delta z = z$

$$A_{par} = F_{ugri} eALCOLO = 1 + 1 \phi 14$$

