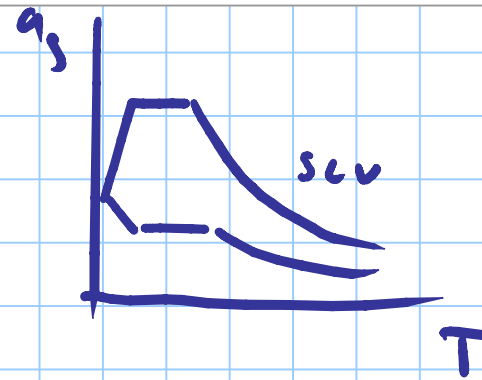


dati sperimentali

fattori di struttura
(di componenti) q



1) masse dell'impalcato

incidenza $\times m^2$

$8 \div 11 \text{ KN/m}^2$ per c.a.

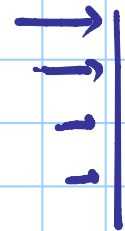
2) periodo fondamentale

indicazioni di normativa
relazione con formule approssimative

3) spinta \rightarrow accelerazioni

4) ANALISI STATICA \rightarrow forze

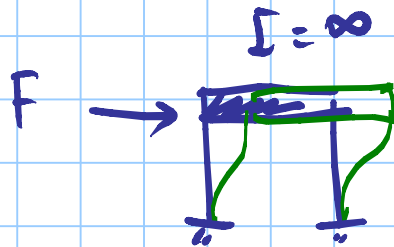
tip. alla base $V_b = M_{r.c.h} \cdot a_j$
 $0,85$



5) previsione dei risultati $\begin{cases} \text{calcolazione} \\ \text{sperimentale} \end{cases}$

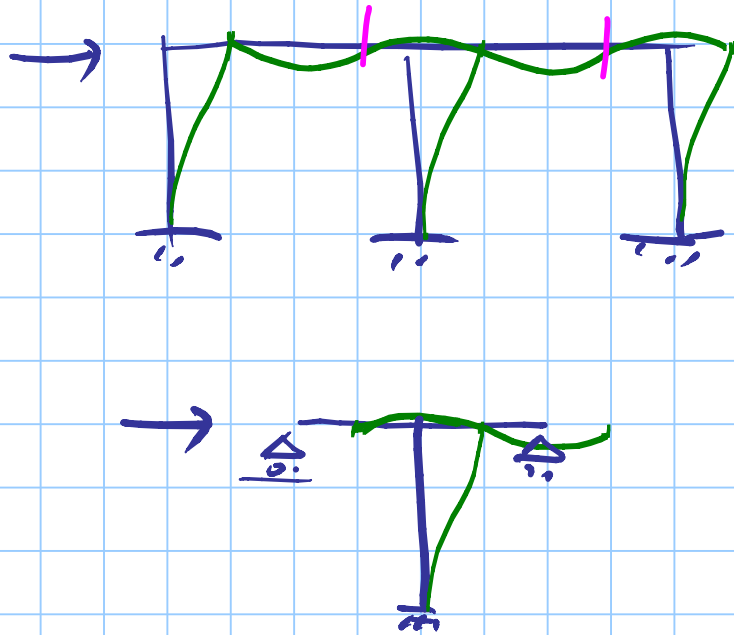
6) confronto con i risultati

$$\text{RIGIDEZZA laterale} = \frac{\tau_{aplo}}{\text{spost. relativo}}$$



$$\delta = \frac{F l^3}{12 E I}$$

$$K = \frac{12 E I}{l^3}$$



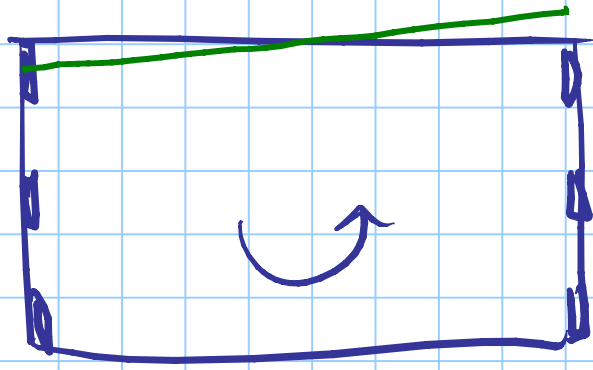
$$K = \frac{12 EI}{l^3} \frac{1}{1 + \frac{1}{2} \left(\frac{I_p / l_p}{I_c / h_c} + \dots \right)}$$

$$\frac{EI}{l} = \frac{31500 \text{ N/mm}^2 \cdot 540000 \times 10^4 \text{ mm}^4}{3.20 \times 10^3 \text{ mm}}$$

$\times 10^{-3}$ \rightarrow $\text{KN} \cdot \text{m}$

$\rightarrow \text{N} \cdot \text{m}$

$$\frac{\text{N}}{\text{mm}^2} \cdot \frac{\text{mm}^4}{\text{mm}}$$



Schemi base

~ CARICHI VERTICALI IN ASSENZA D. SISTEMA

- " " " IN PRESENZA "

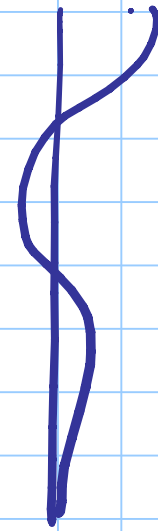
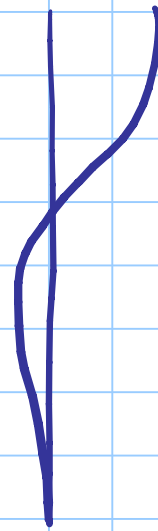
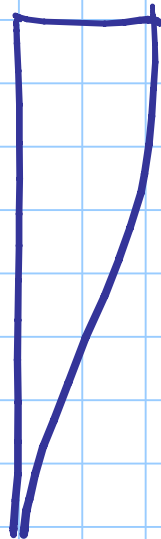
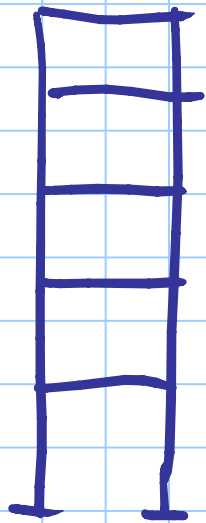
- SISTEMA x con C_n in pos. minima

- SISTEMA y " " " " "

- eccentrate x $M = F \cdot e$

- " y

ANALISI MODALE, SCHEMA PIANO



1°

2°

3°

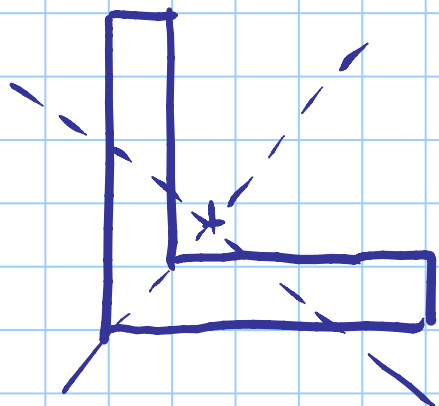
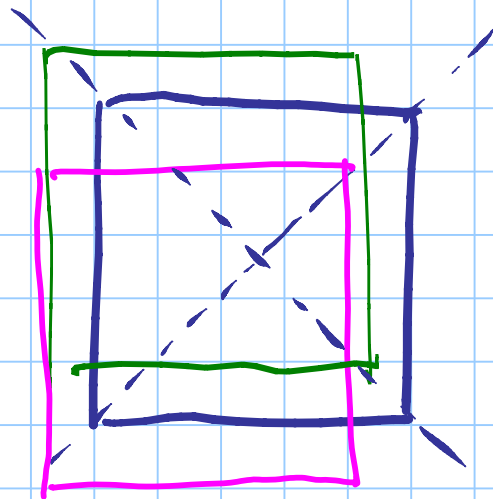
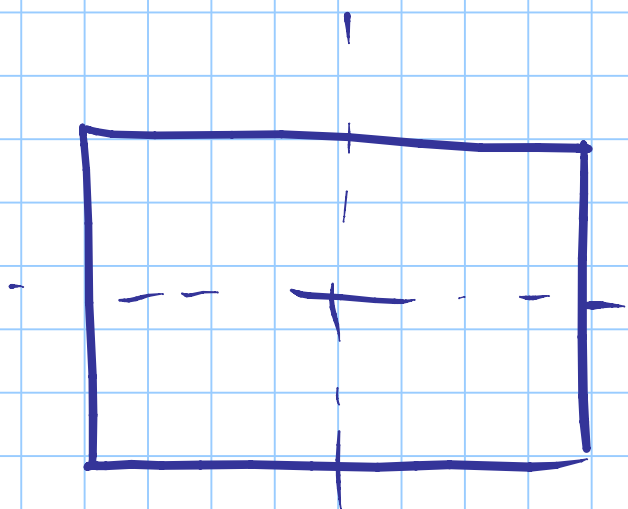
T_1

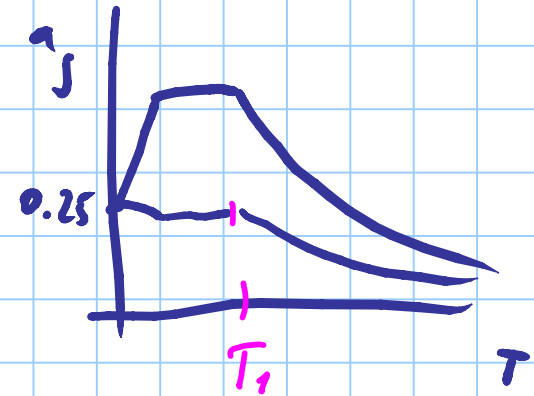
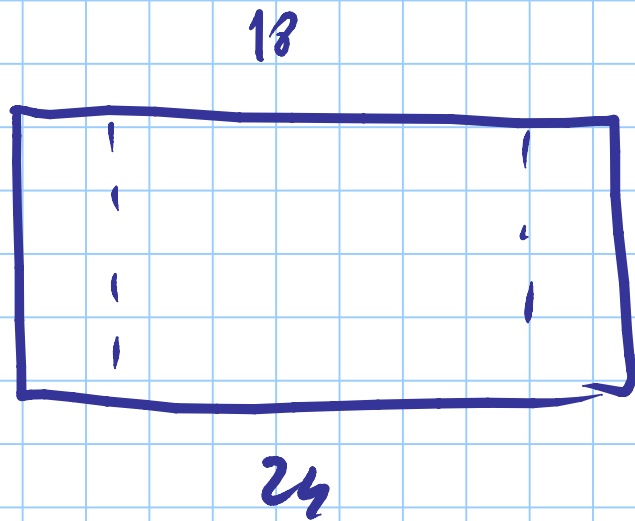
>

T_2

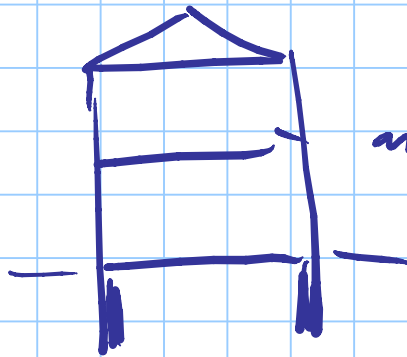
>

T_3





$$q_s = 0.20 \div 0.25 q_s$$



16 m²
me 220 m²

15

W
2400 kN

10

2200 kN

4600 kN

$V_b = 920 \text{ kN}$

ripetendo il Test.

$V = 60 \div 90 \text{ km}$ per : pil.
più volte

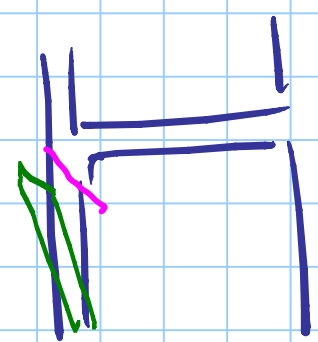
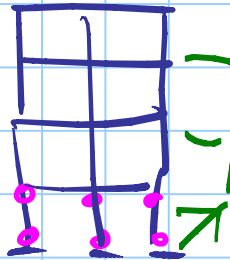
$M = 100 \div 150 \text{ km}$

CROLLI

CAPANNONI
PREFABBR.

sozzimato

edificio
a Tolei.



NECESSITA' D,

GERARCHIA DELLE RESISTENZE

"PROGETTO IN CAPACITA' "

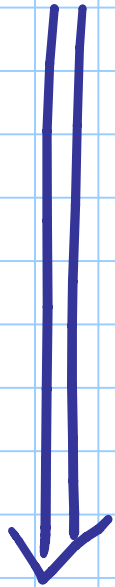
ARMATURA A FLESSIONE DELLE TRAVI



ARMATURA A TAGLIO Travi

GERARCHIA TAGLIO \leftarrow FLESSIONE

PROGETTO A TAGLIO in base alla CAPACITA' RESISTENTE a flessione



PILASTRO

GERARCHIA A FLESSIONE PILASTRO \leftarrow TRAVE

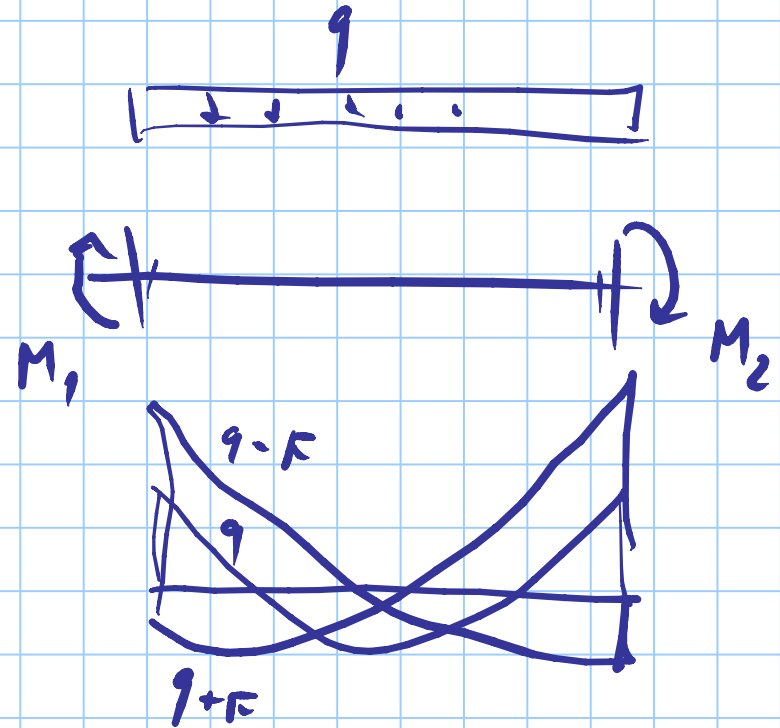
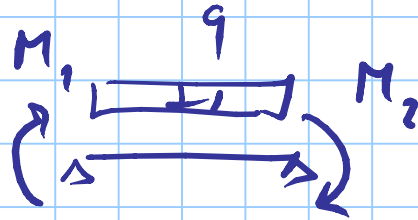
PROGETTO IL PILASTRO A FLESSIONE in base alla CAPACITA' resist. della Trave e Pilastro



TAGLIO

TAGLIO NELLE TRAVI

$$V = \frac{ql}{2} + \frac{M_1 + M_2}{l}$$



$$V = \frac{ql}{2} + \gamma_{M1} \frac{M_{M11} + M_{M12}}{l}$$

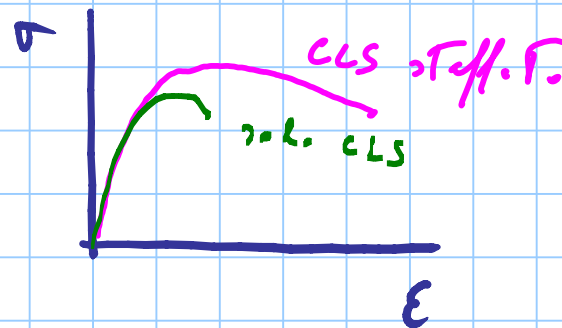
DUTTILITA' DELLE SEZIONI che si plasticizzano

- evitare rotture a Taglio.

GERARCHIA TAGLIO \leftarrow FLESSIONE \rightarrow STAFFE

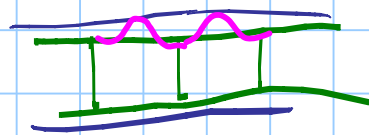
- contenere il calcestruzzo compresso

\rightarrow mettere STAFFE

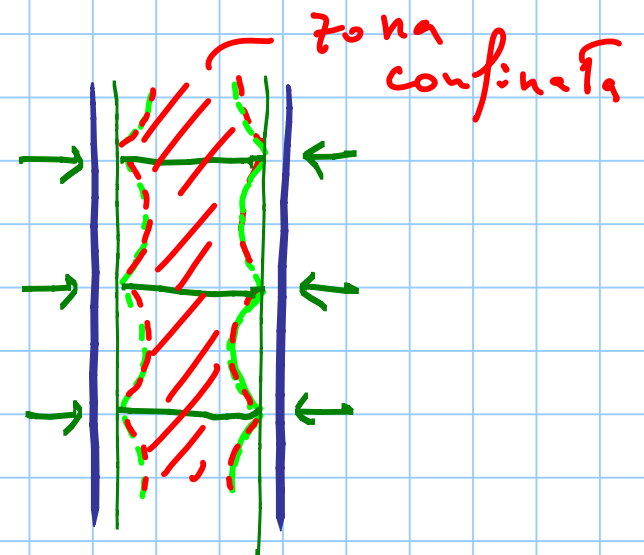
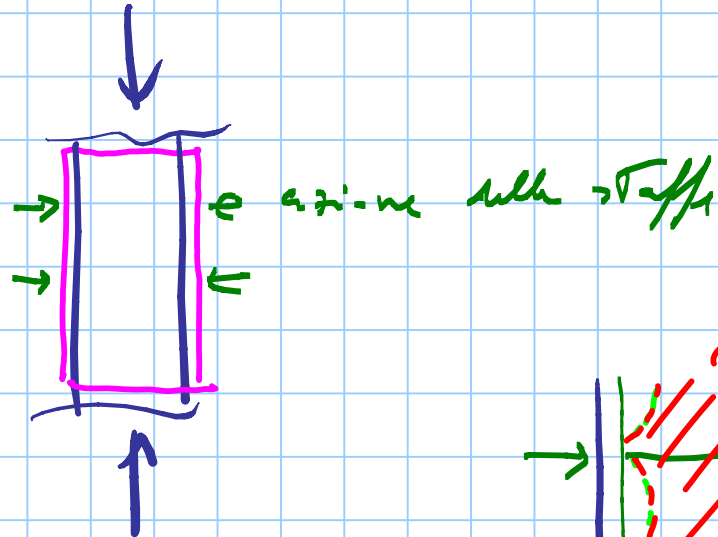
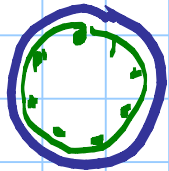


- evitare instabilità barre compresse

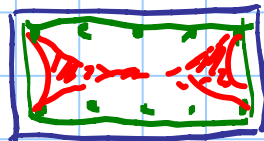
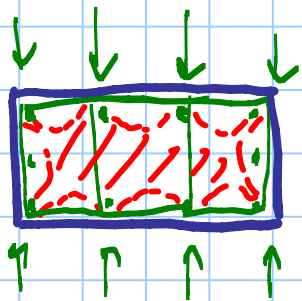
\rightarrow STAFFE

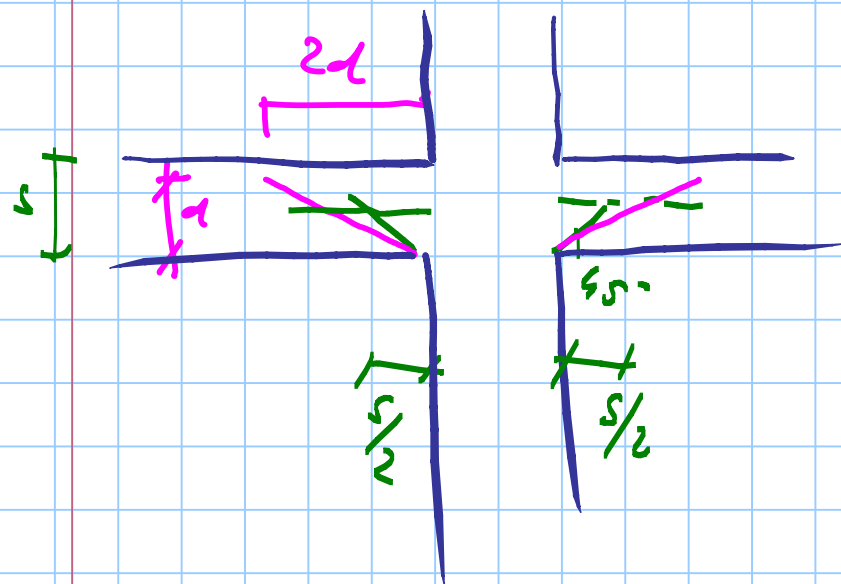


CONFINAMENTO

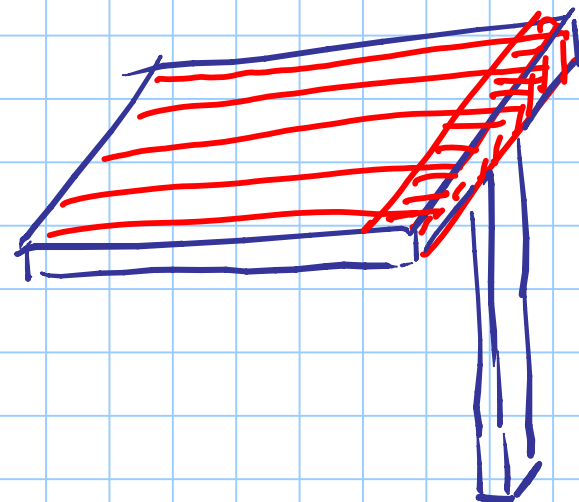


EFFICACIA
del confinamento





tagli. Trave-pilastro



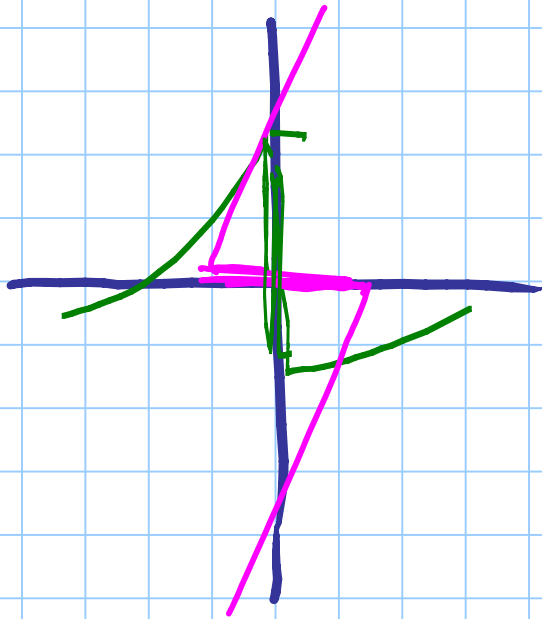
moment. flessione

per q Trave - Trave

per sisma Trave - pilastro.
Trave ortogonale?

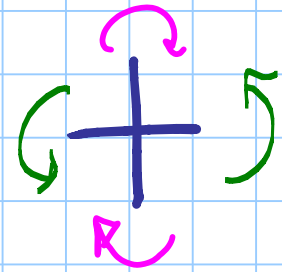
GERARCHIA

PILASTRO - TRAVE



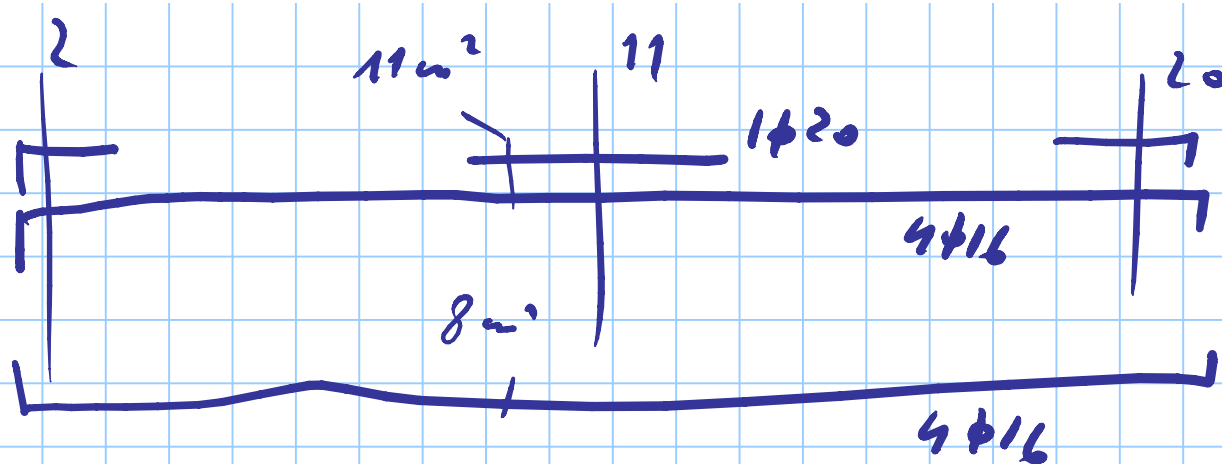
$\Delta M_{pil, R_i}$

ΔM_{Trav}



$$\sum M_{pil} = \sum M_{tra}$$

$$\sum M_{R_i, pil} \geq \gamma_{R_i} \sum M_{R_i, Trav}$$



40 x 24

$h = 24$

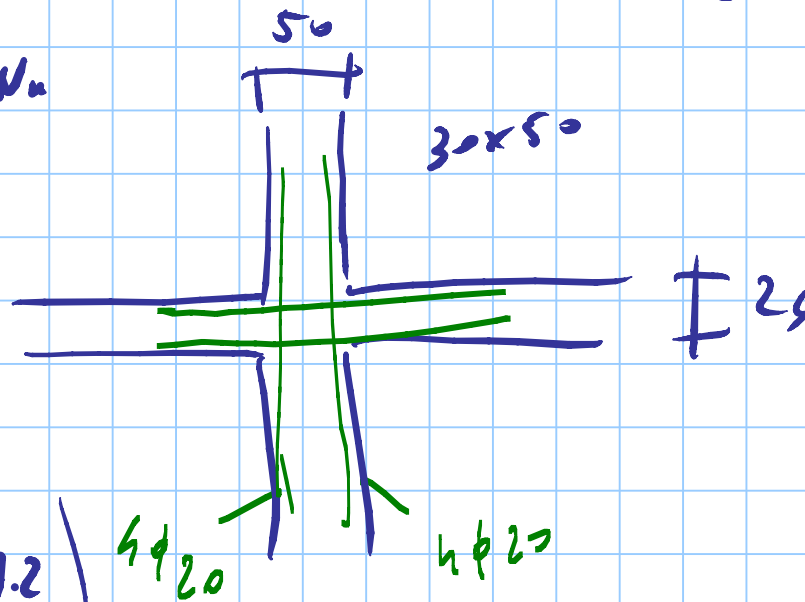
$$\bar{M}_{RA,TL} = 0.9 A_s f_{yd} = 77.5 \text{ kNm}$$

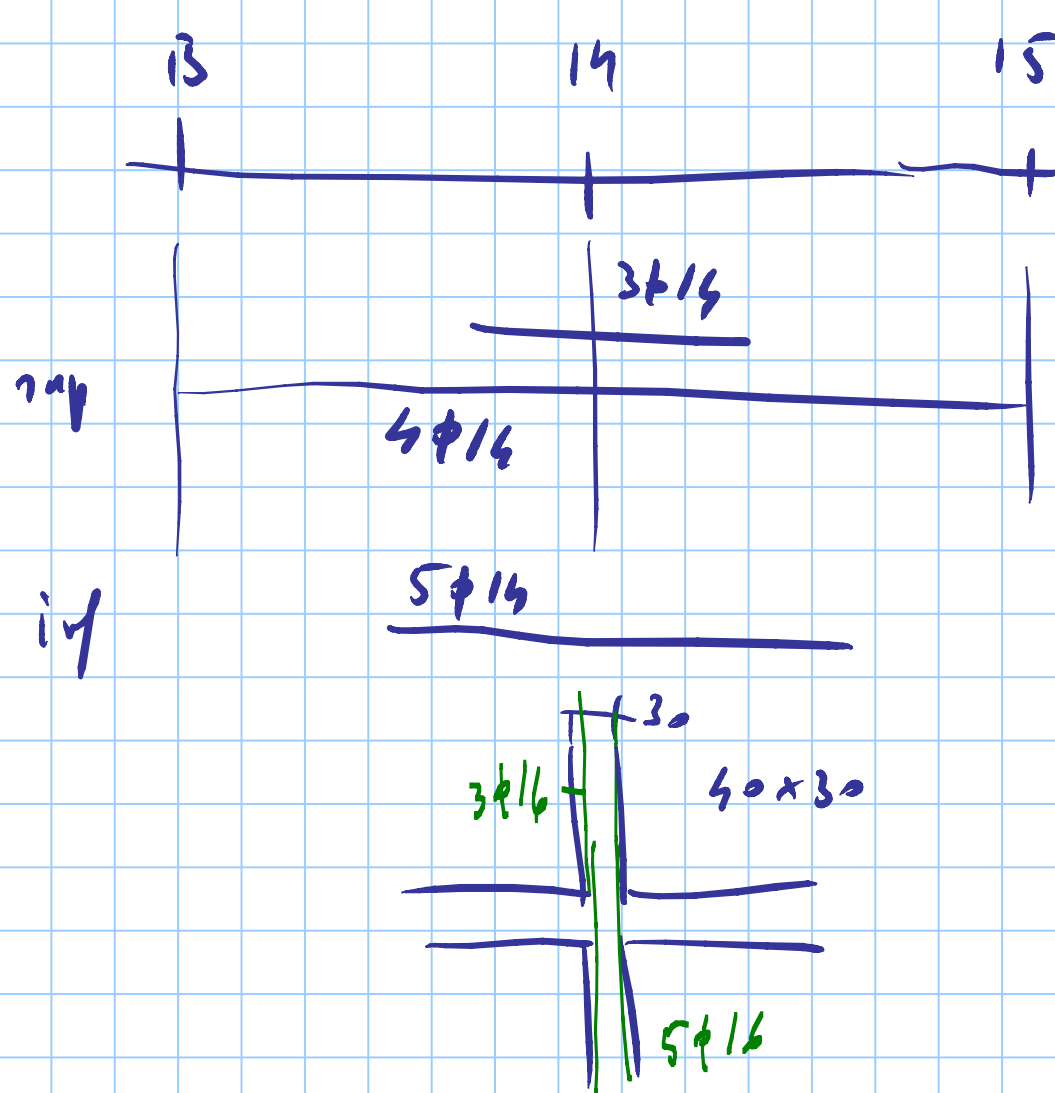
$$M_{RA,TL}^+ = 56.3 \text{ kNm}$$

$$\sum M_{RA,TL} = 133.8 \text{ kNm}$$

$$\times 1.1 = 147.2$$

$$\gamma_{RA} = 1.1 \text{ CD "B"}$$





$$58 \times 28$$

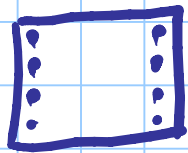
$$M_{R1}^- = 88.7 \text{ kNm}$$

$$M_{R1}^+ = 63.4 \text{ kNm}$$

$$152.1$$

$$\times 1.1 = 167.3 \text{ kNm}$$

30 x 40



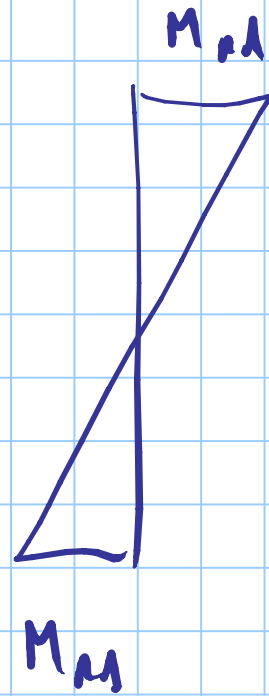
4x20

10 x 240

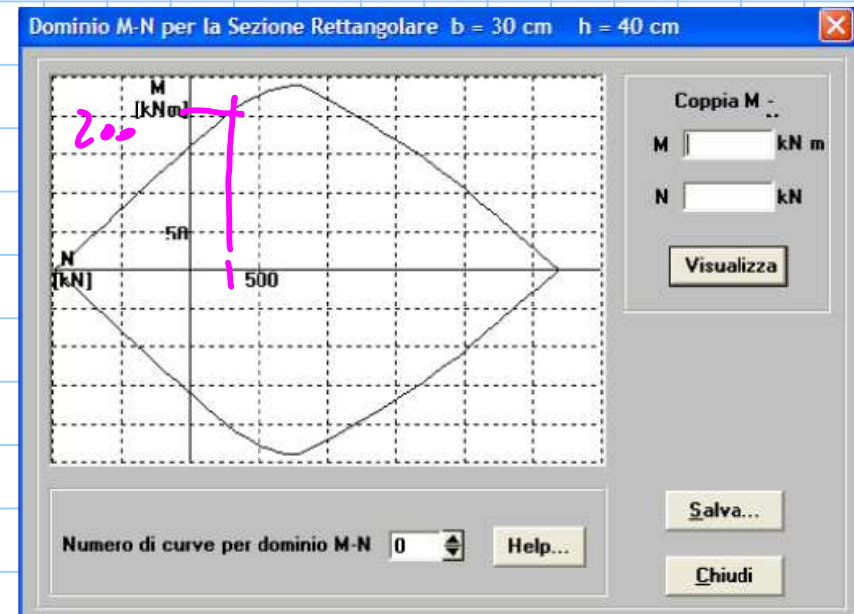
$$M_{ed} = 200 \text{ kNm}$$

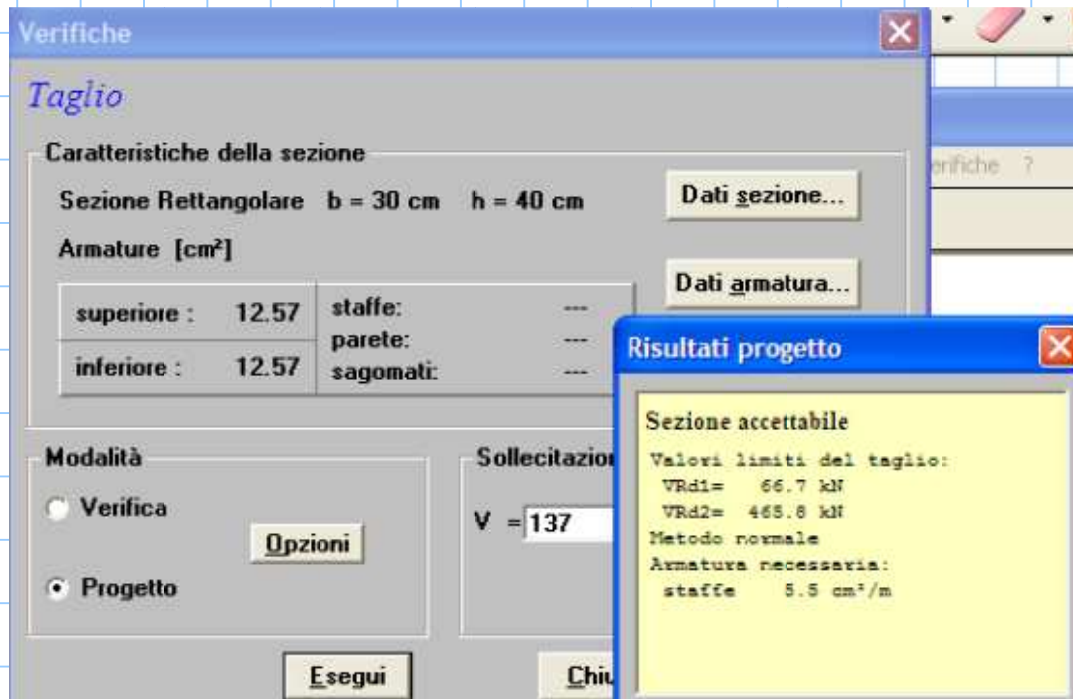
$$V = \frac{2 \times 200}{2.92} = 137 \text{ kN}$$

$$3.20 - 0.18$$



$$V = \frac{2 M_{ed}}{l} \gamma_{ed}$$





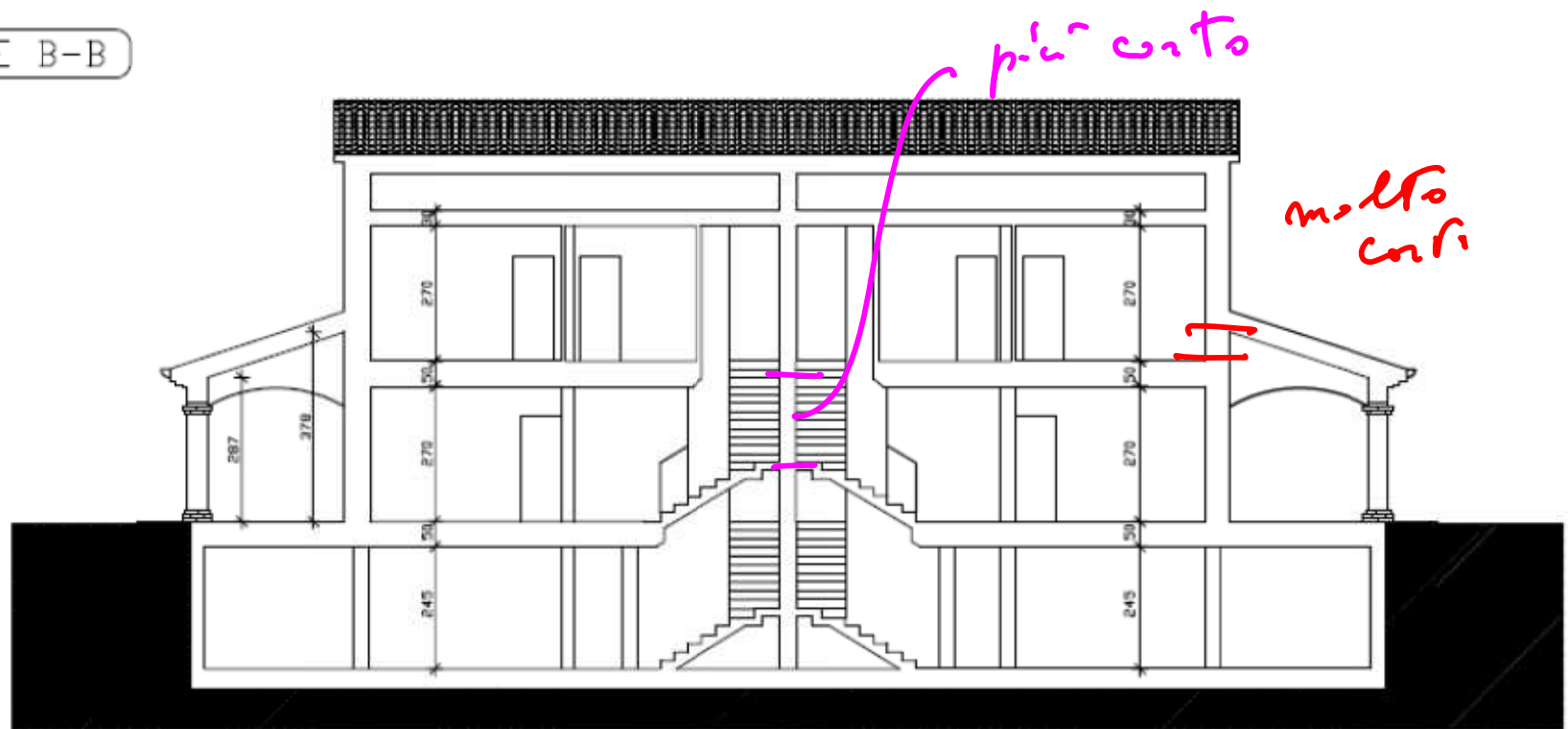
$$48/15 \quad \dots$$

$$2 \times 0.5 \times 6.67 =$$

$$= 6.67 \text{ cm}^2/\text{m}$$

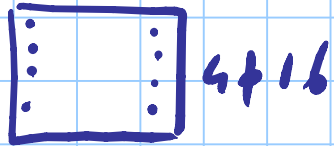
$$\approx \dots \approx 5.5 \text{ cm}^2/\text{m}$$

SEZIONE B-B



zona scale : pilastro con $l = 1.80$ circa

pile 30 x 40



$$M_R = 150 \text{ kNm}$$

$$m \times 180 \text{ kNm}$$

$$V = \frac{2 \times 150}{1.80} = 167 \text{ kNm}$$

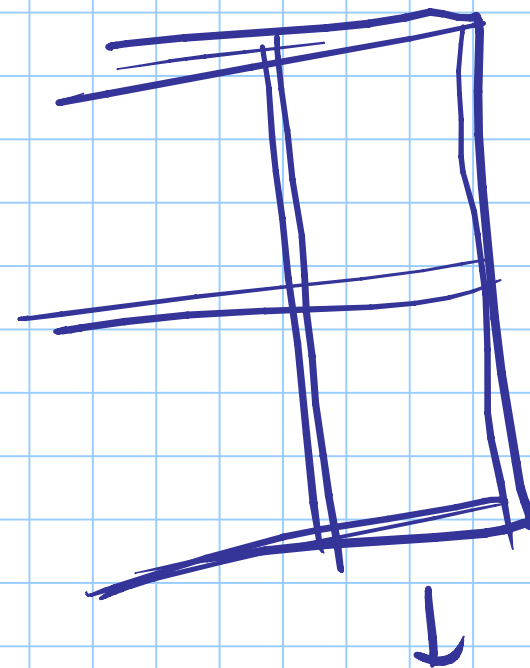
non ci sono mai
op. rel. nel prim.

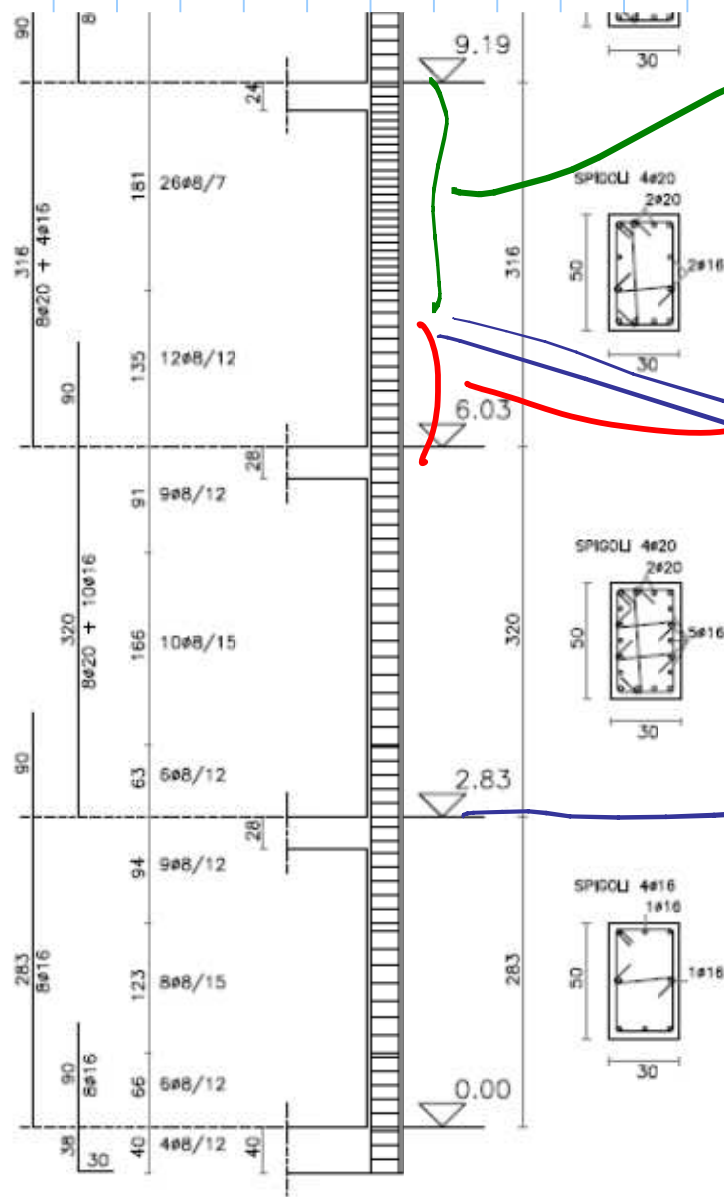
Tese di prim.

68.000

nel piano ortogonale
 \hookrightarrow possono essere spinti

T. piang





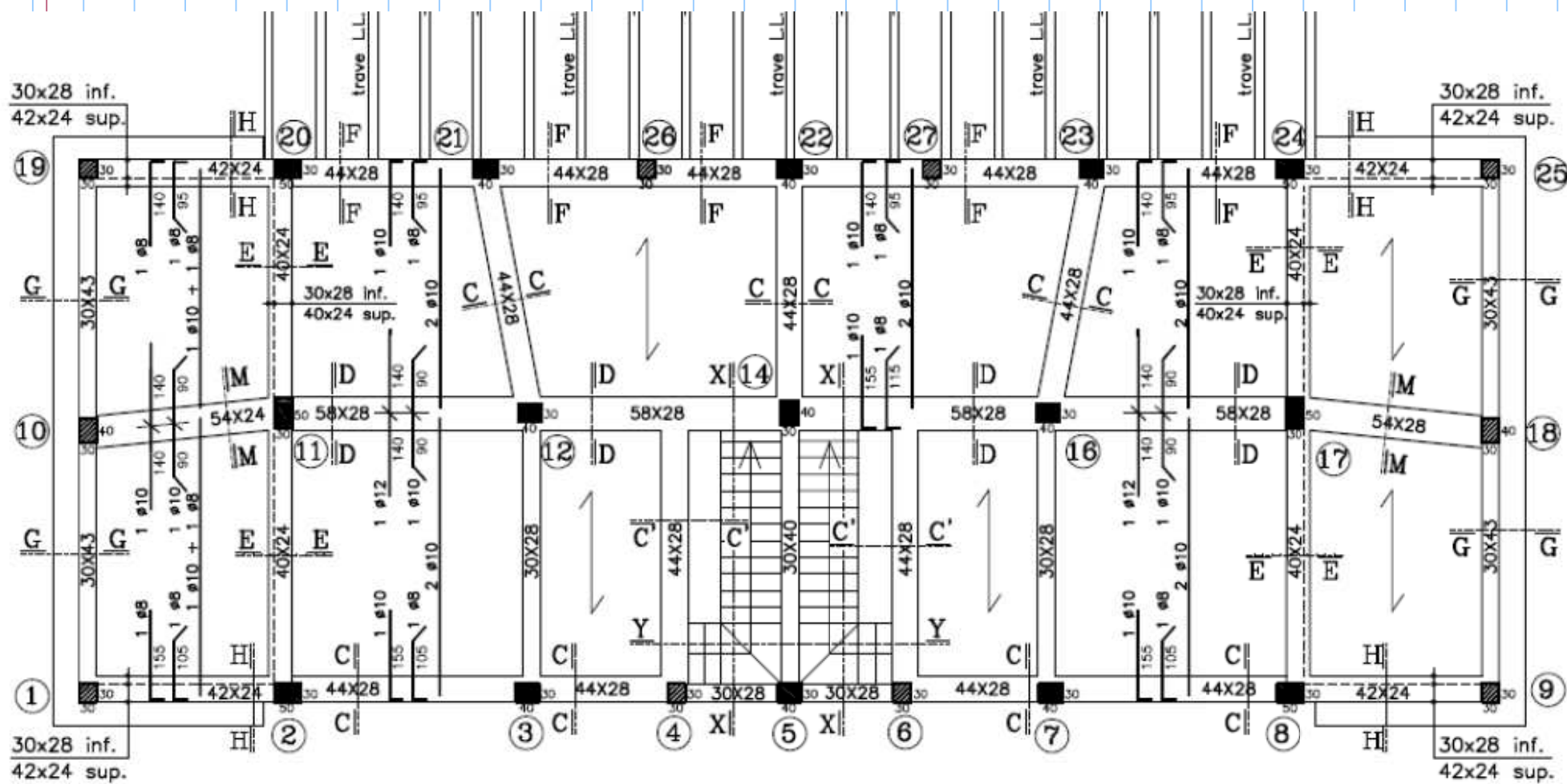
imp: 8/7 $\phi 8/7$

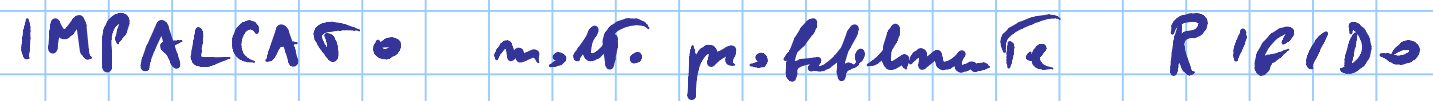
leggi?

TESTO 1A

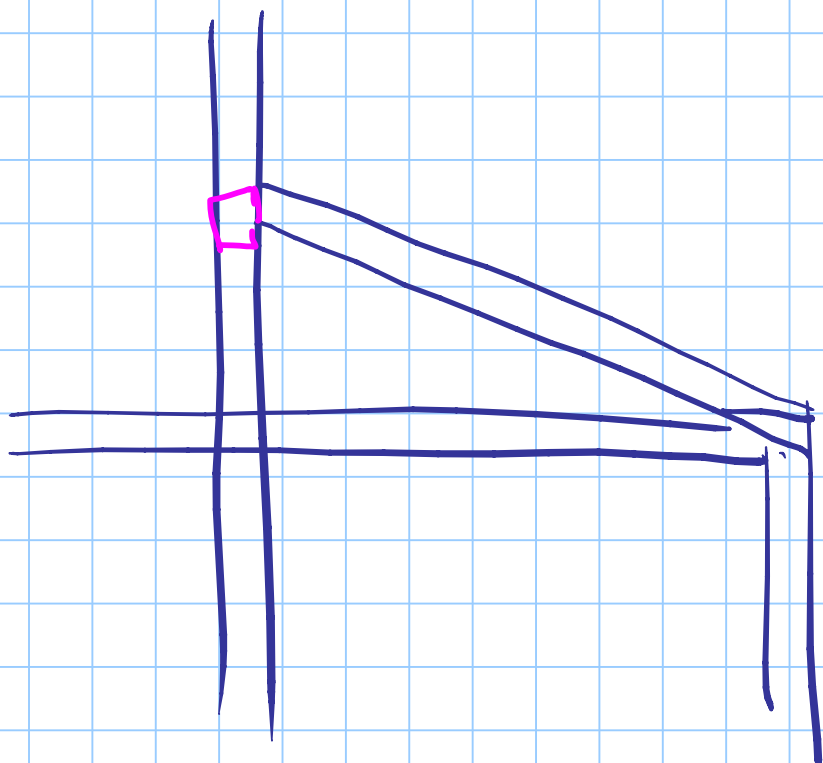
CAN 5. NATO

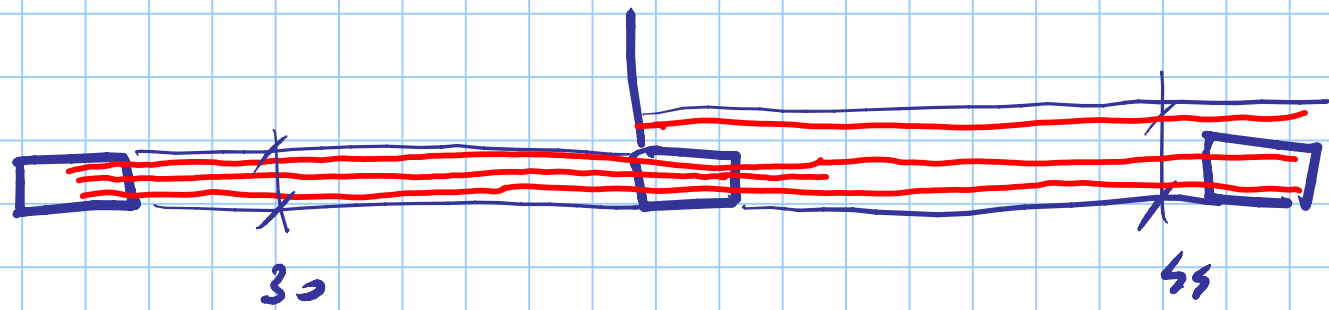
PILASTRATE 11-17





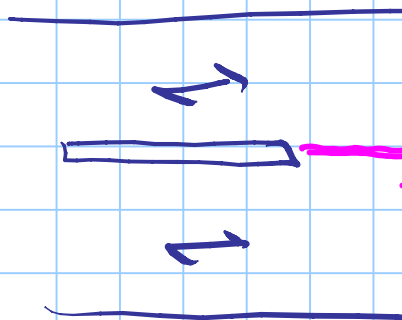
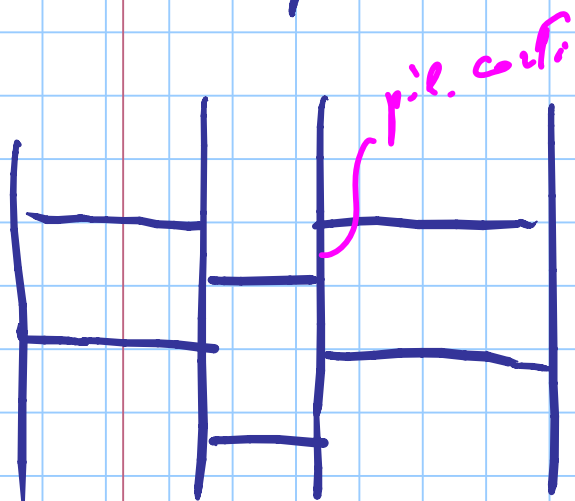
IMPALCASSO m.f. pre-fabbricato RIFIDO



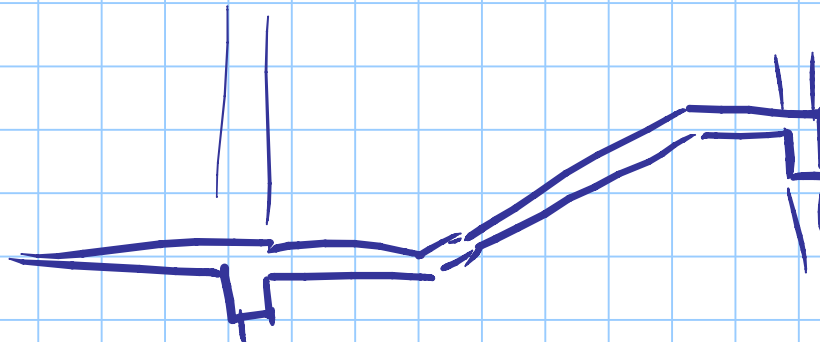


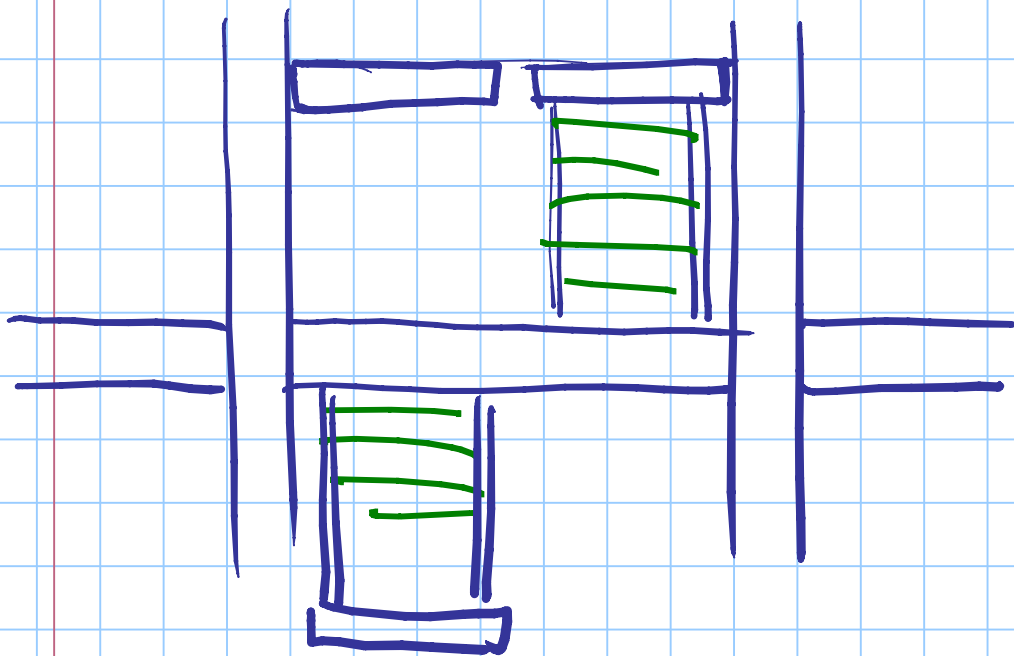
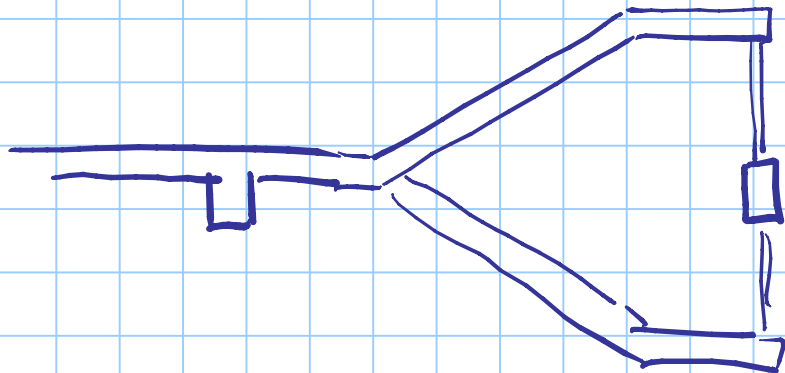
SCALA

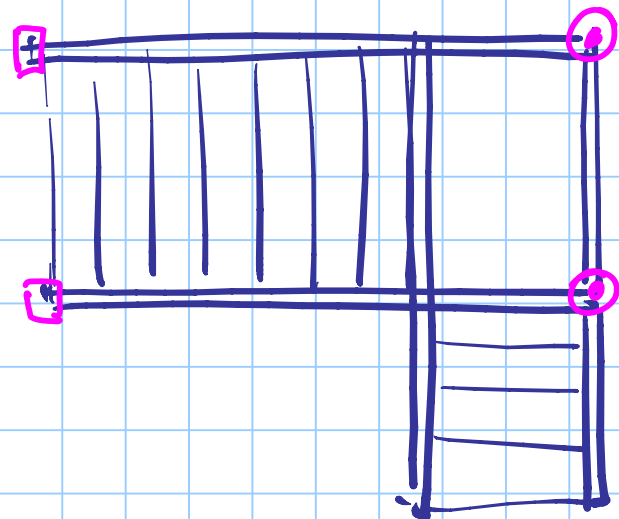
tab. di pezzi. t.



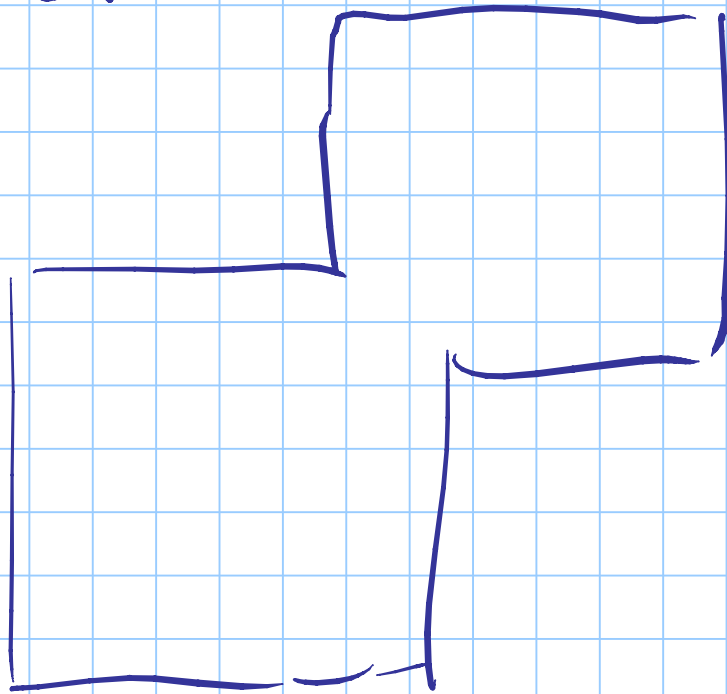
giunto







IMPALCATO



VERIFICA DI

- RIGIDEZZA

- RESISTENZA