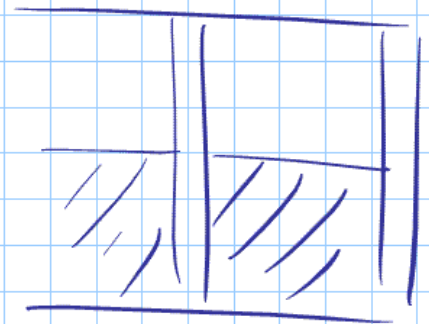
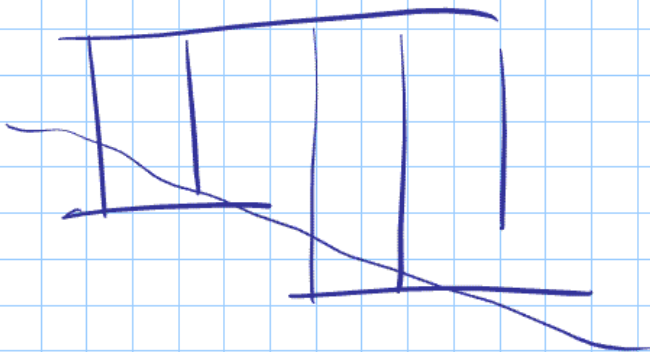
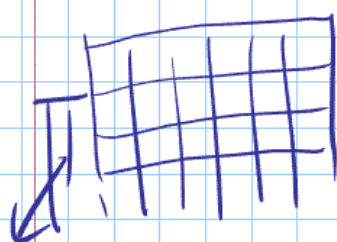
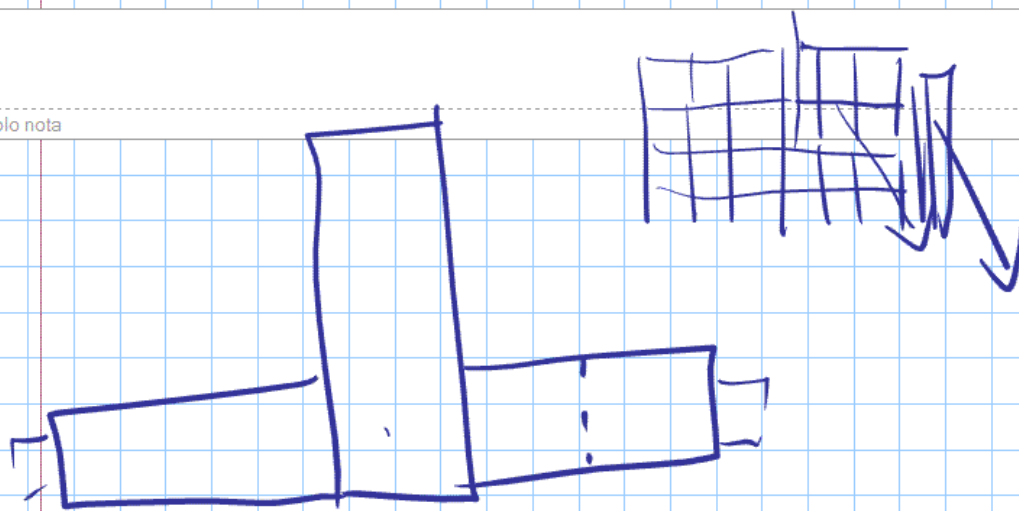
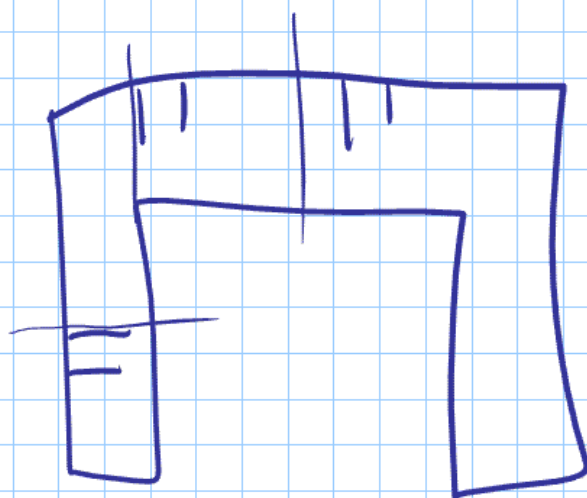
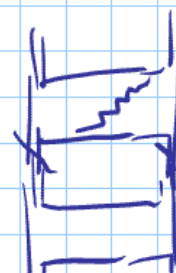


$$\delta = \frac{F l^3}{12 E I}$$



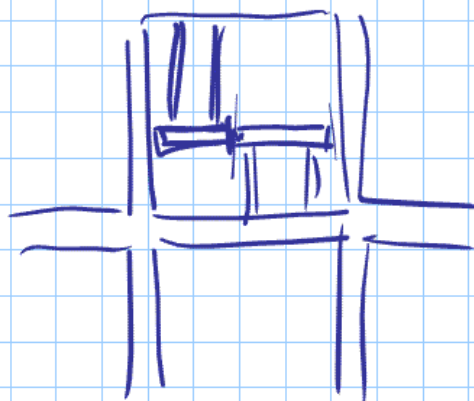
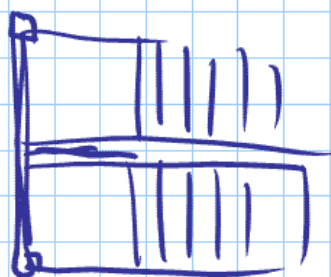
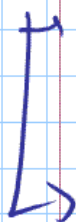
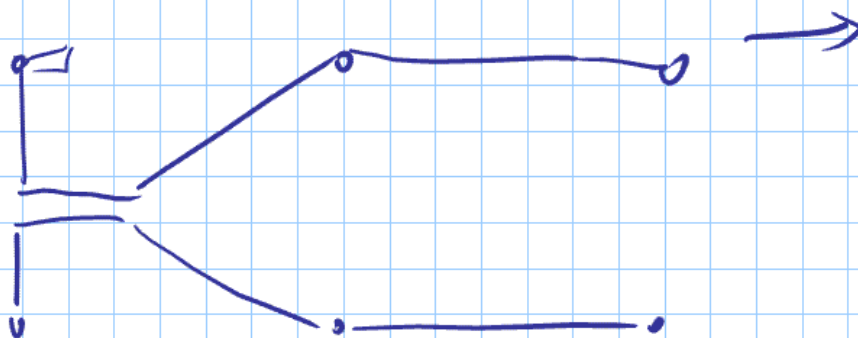
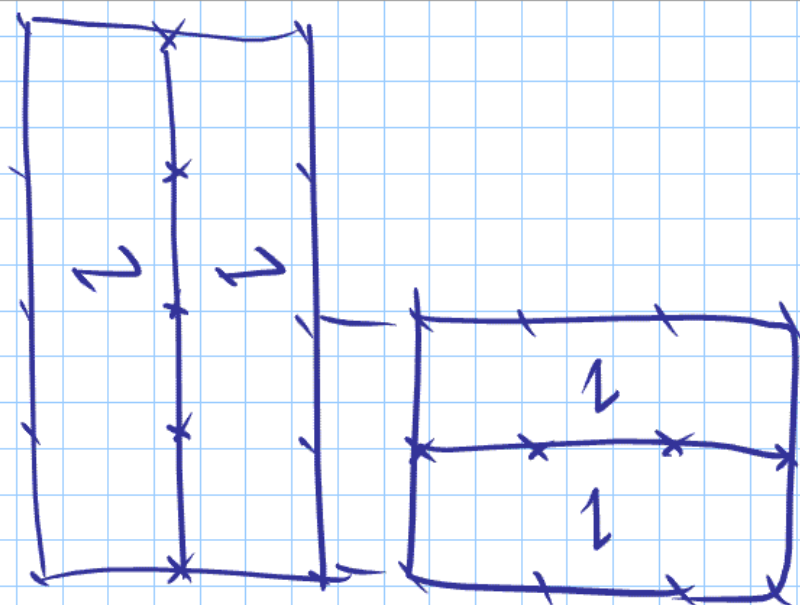


80  
25





much  
pin rigid



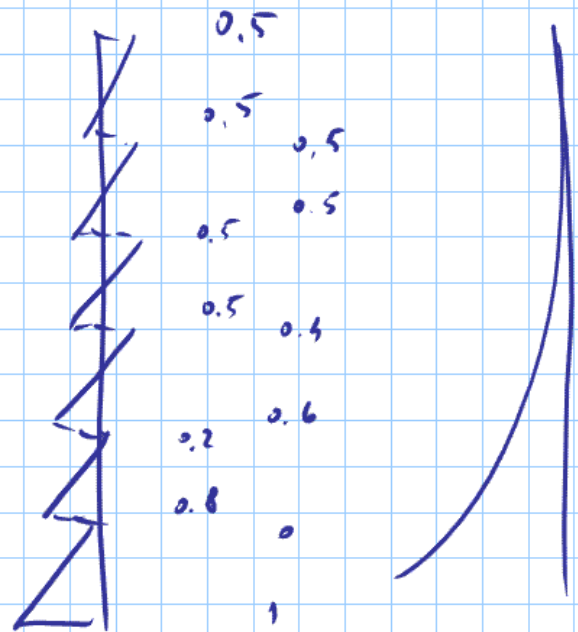
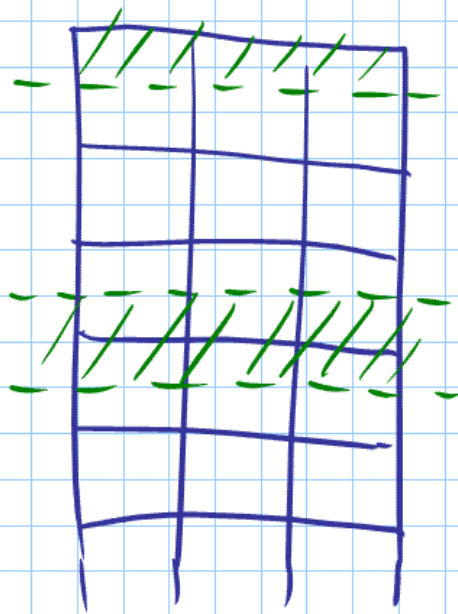
$N_{rich}$

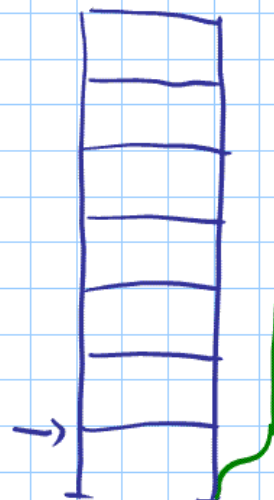
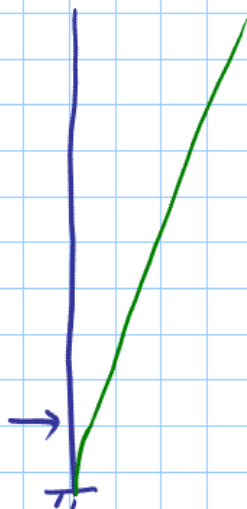
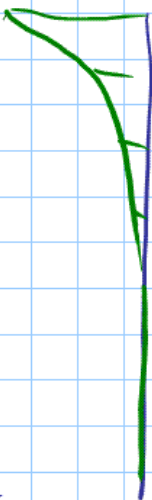
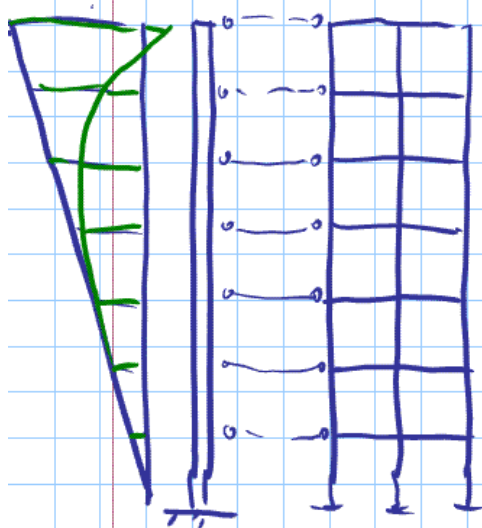
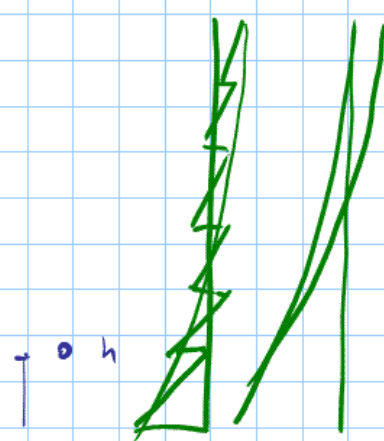
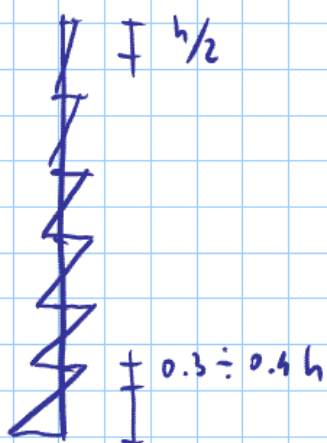
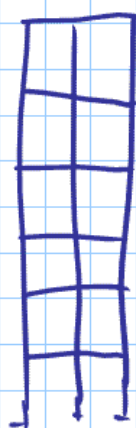
scale	1243 KN	2486 $m^2$	<del>30x80</del>	<del>40x70</del>
centrals	1056	2112	<del>30x70</del>	<del>30x80</del>
latrals	726	1452	<del>30x70</del>	<del>30x80</del>
angles	462	924	<del>30x70</del>	<del>30x80</del>

	scale + centrals		latrals	
6	30x60		30x60	
5	30x60	3-4	30x60	9-10
4	30x70		30x60	
3	30x70	5-6	30x70	
2	30x80	7-8	30x70	11-12
1	30x80		30x70	

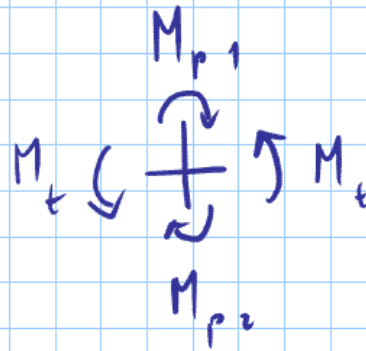
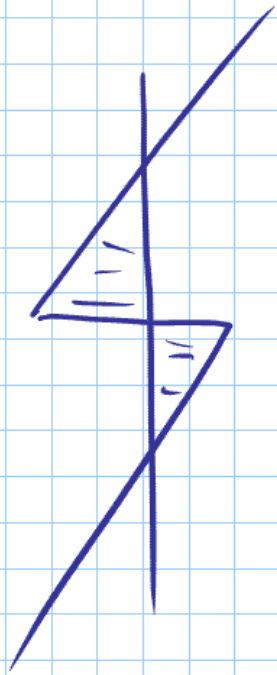
5, 8, 9, 10, 11, 12, 13      12, 3, 4, 6, 7, 14

15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27









$$M_t = \frac{M_{p1} + M_{p2}}{2}$$

$$M = 200 \text{ kNm}$$

$$d = 2 \sqrt{\frac{M}{b}}$$

$$b = \frac{M}{d^2} = \frac{200 \times 0.018^2}{0.24^2} = 1.10 \text{ m}$$

$$M = \frac{b d^2}{2^2}$$

$$60 \times 28$$

$$0.6 \times 0.28 \times 25 = 4.2 \text{ kN/m}$$

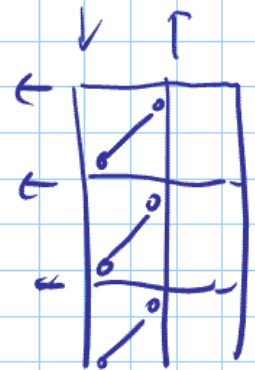
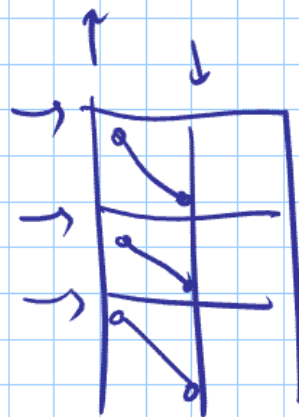
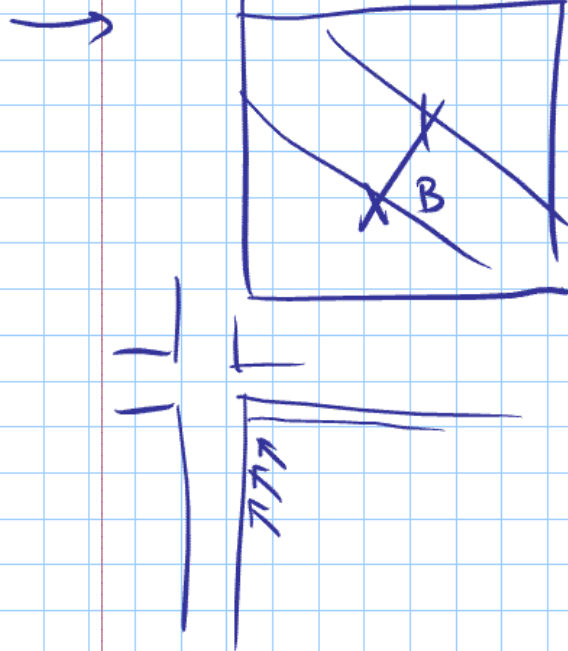
$$\text{soln. } 0.6 \times 2.68 = 1.6$$

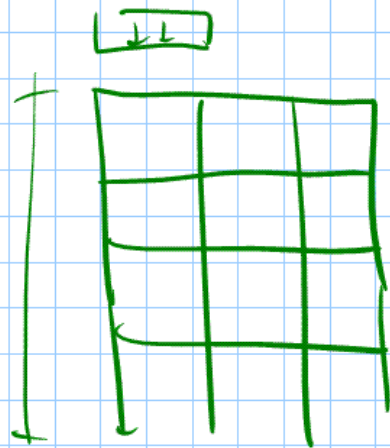
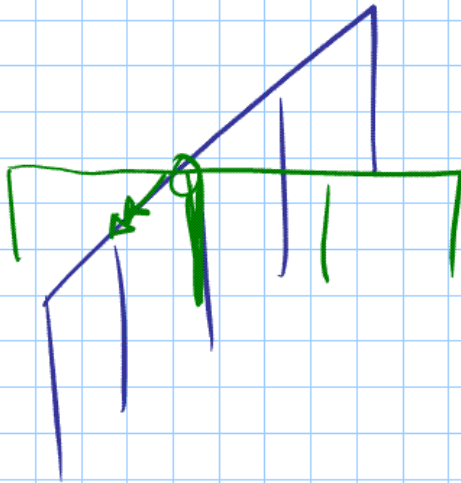
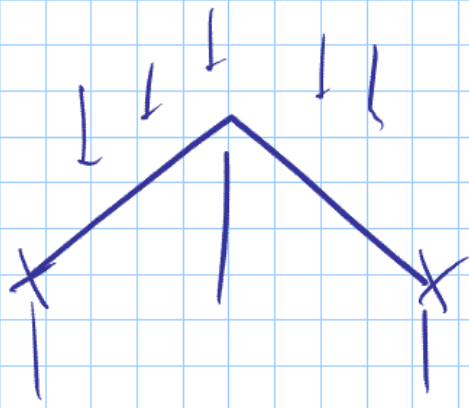
$$4.2 - 1.6 = 2.6 \text{ kN/m}$$

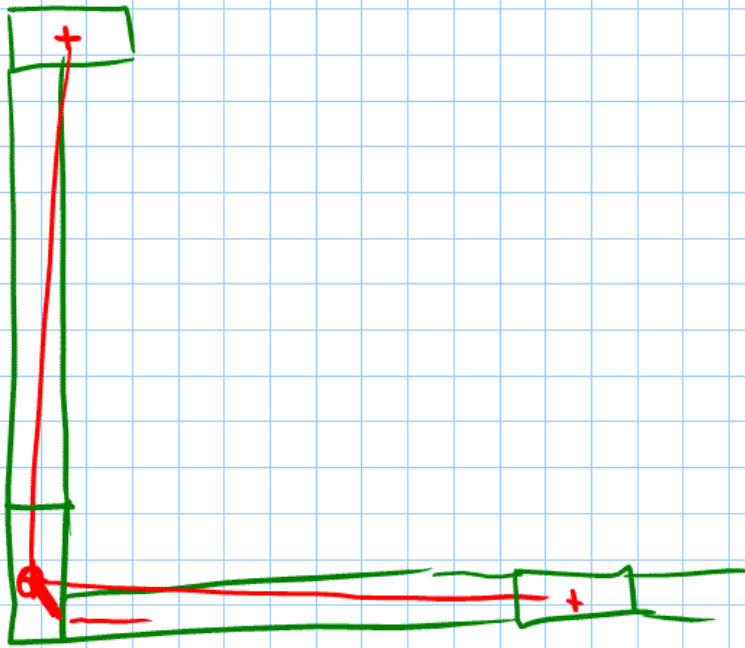
$$\begin{array}{c} 60 \\ 30 \times 70 \\ 80 \end{array}$$

$$\begin{array}{c} 4.5 \\ 0.3 \times 0.7 \times 25 = 5.25 \text{ kN/m} (3.20 \times 0.28) \\ 6.00 \text{ kN/m} \times (3.60 - 0.28) \end{array}$$

TAMPONATURE







# TABELLA SEZIONI

1)  $60 \times 28$

2) - -

3)  $30 \times 60$

4)  $60 \times 30$

5)  $30 \times 70$

6)  $70 \times 30$

7)  $30 \times 80$

8)  $80 \times 30$

At. Trave

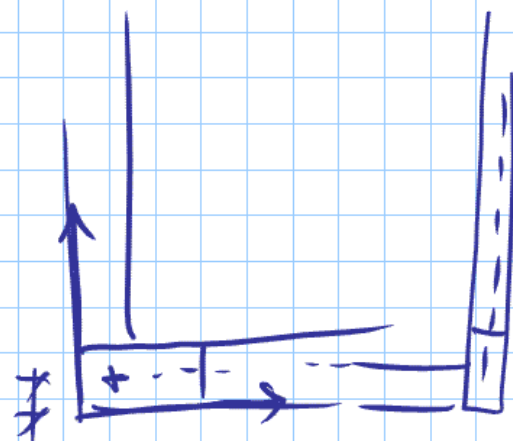
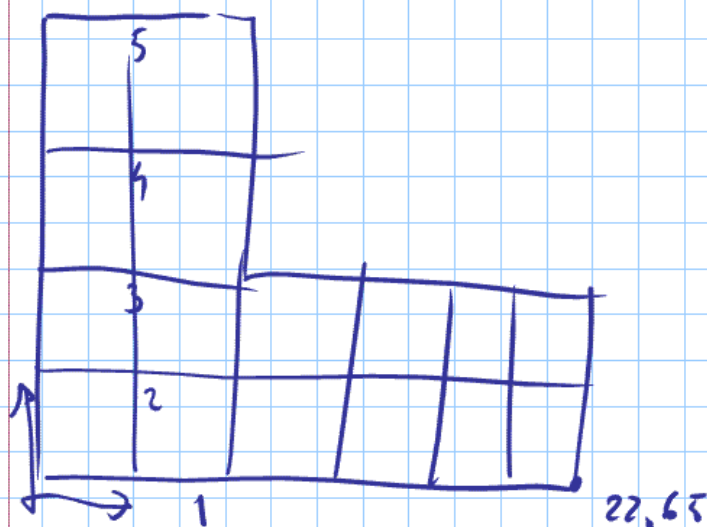
pil. + gr. n.

9)  $30 \times 60$  pil - gr.

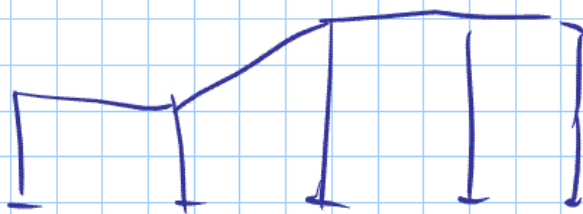
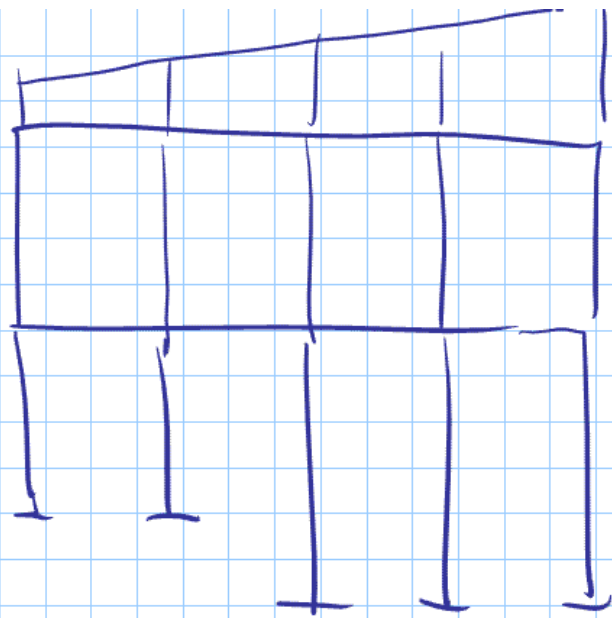
10)  $60 \times 30$

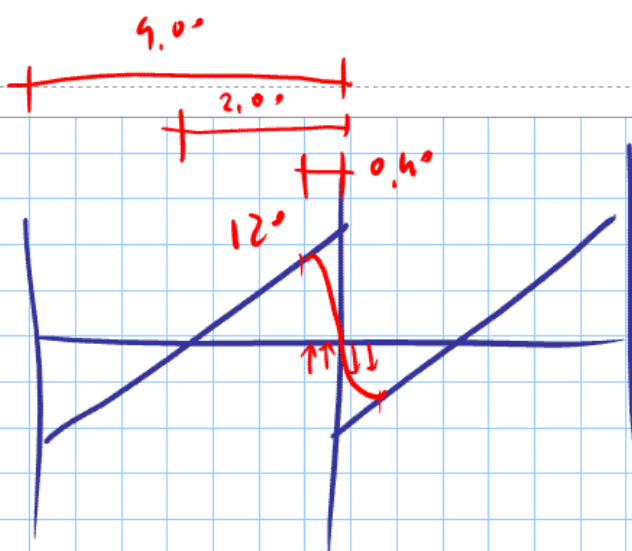
11)  $30 \times 70$

12)  $70 \times 30$

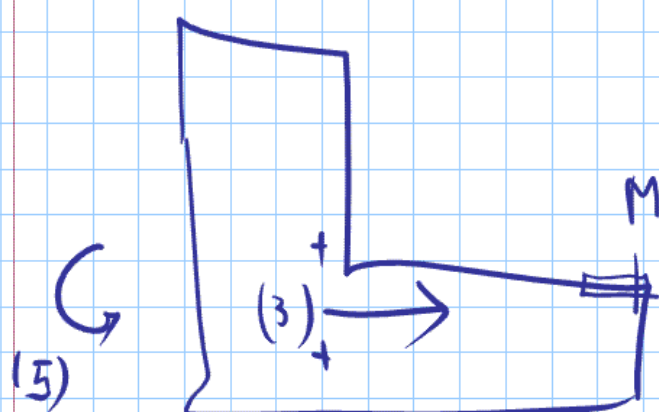
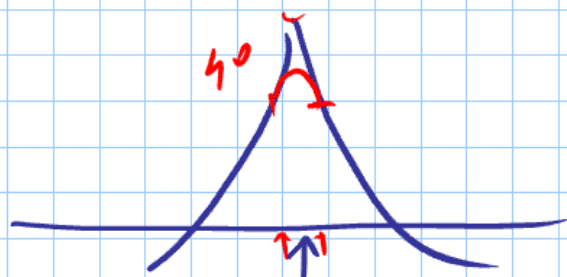








$$M = 160 \text{ kNm}$$



(3)

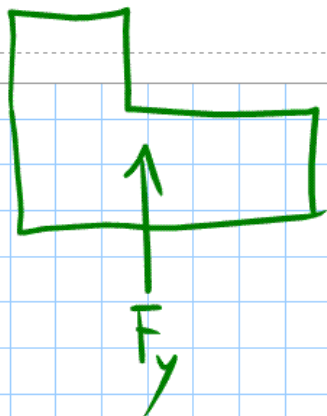
(5)

$M_1$

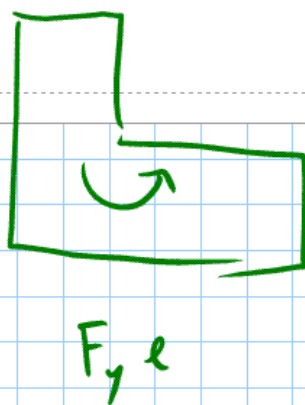
$M_2$

$(|M_1| + |M_2|)$





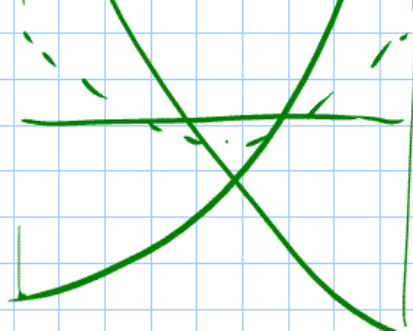
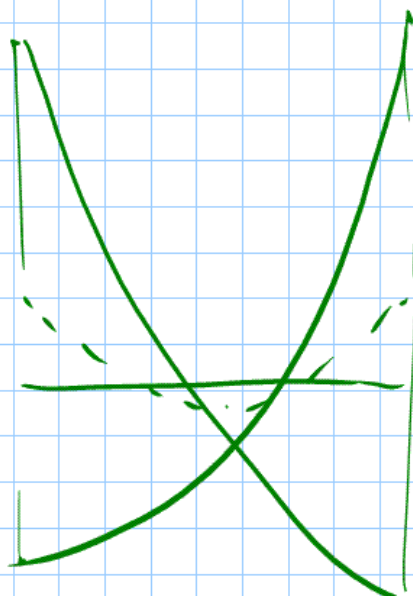
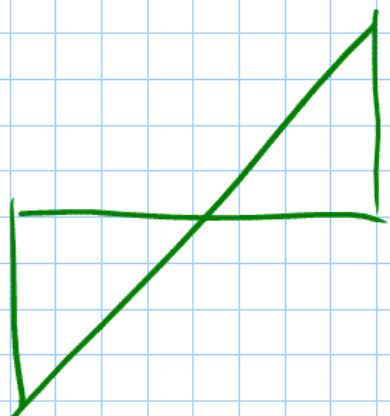
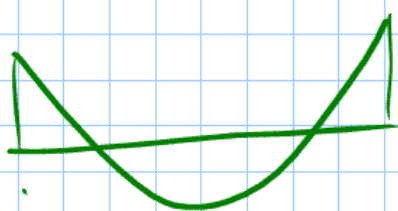
$M_4$



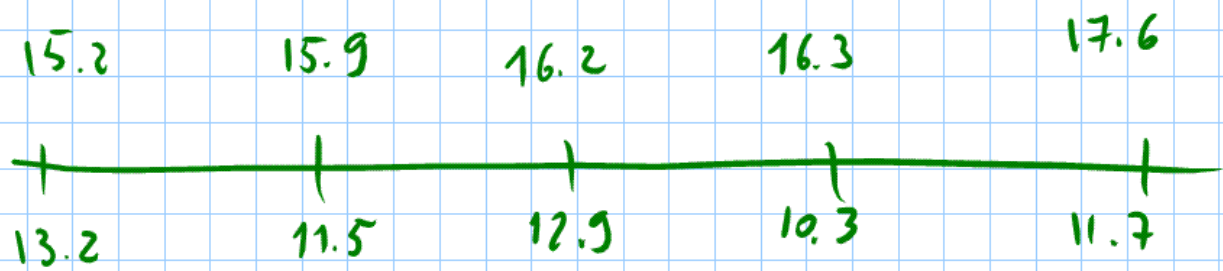
$M_6$

$$\text{sign}(M_4) (|M_4| + |M_6|)$$

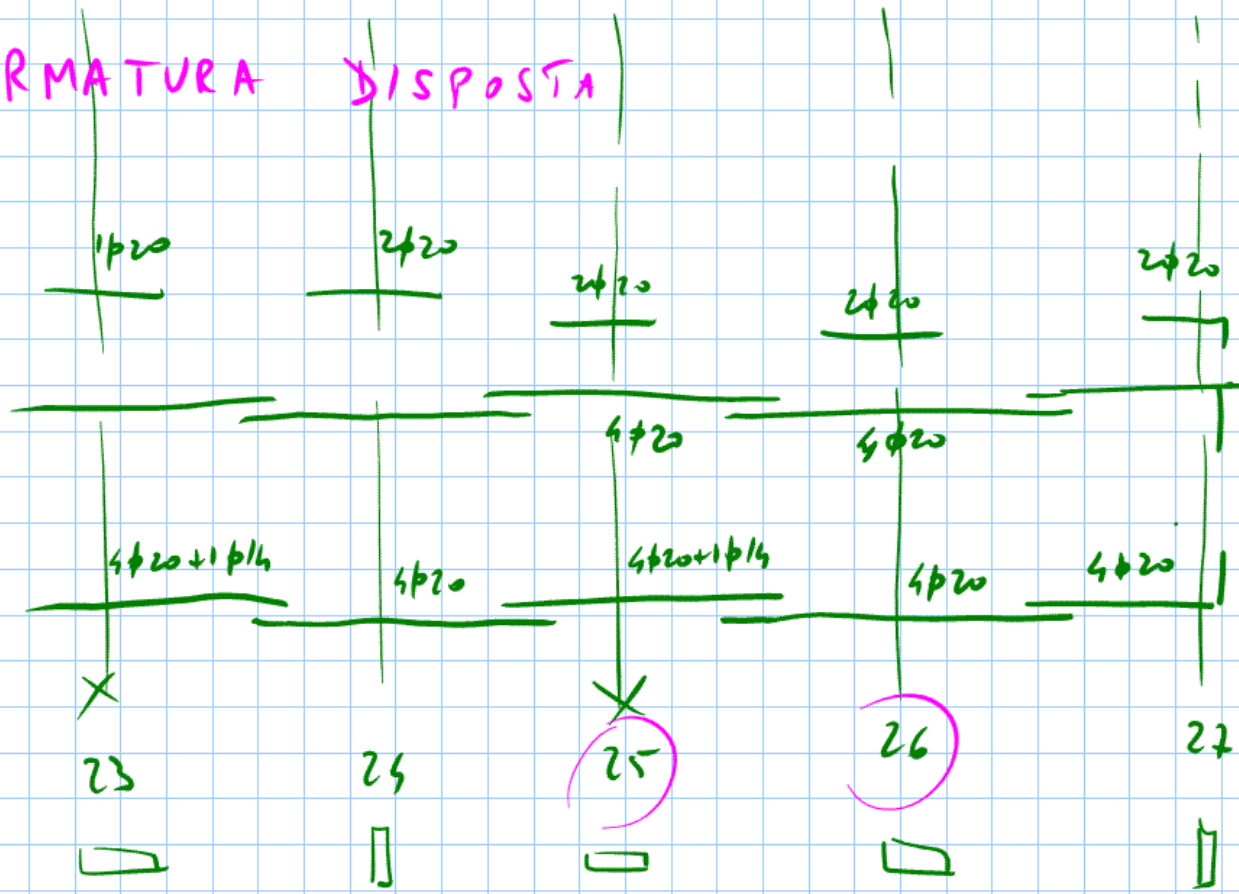
risma y



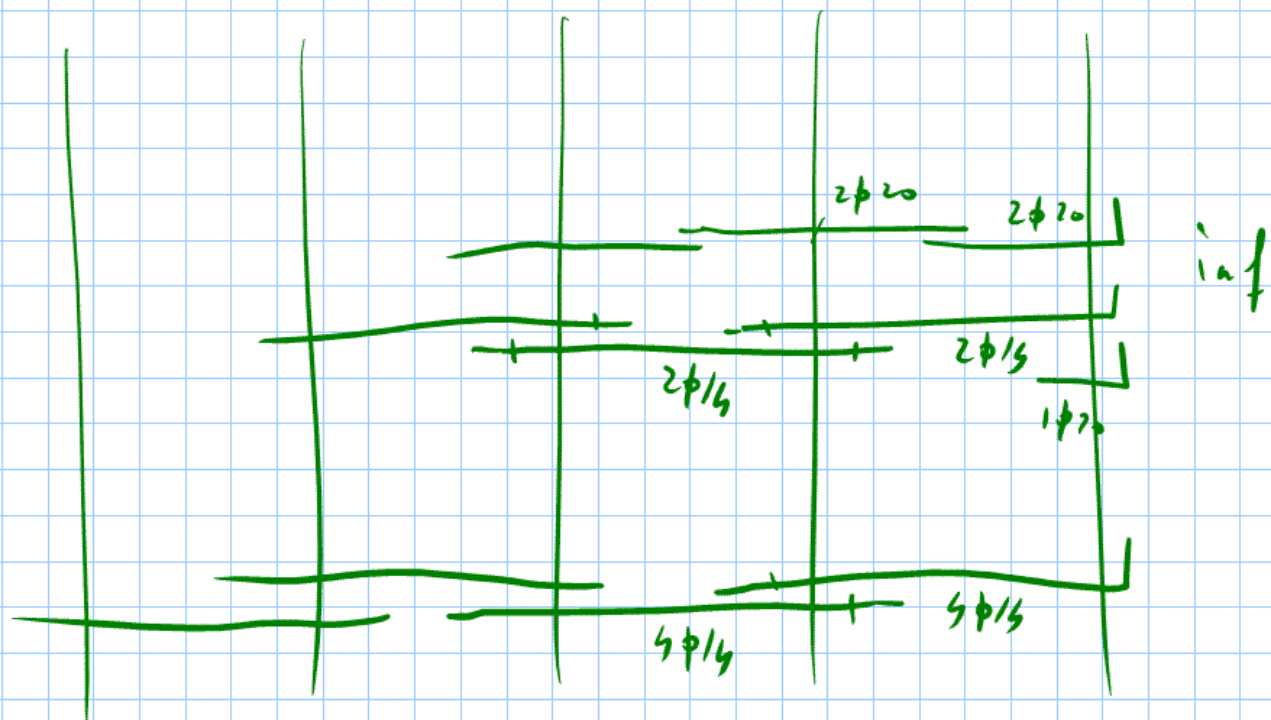
$$A_s = \frac{M}{0.9 \cdot d \cdot f_{yd}} = \frac{137 \times 10}{0.9 \times 0.24 \times 391.3} = 16.2 \text{ cm}^2$$



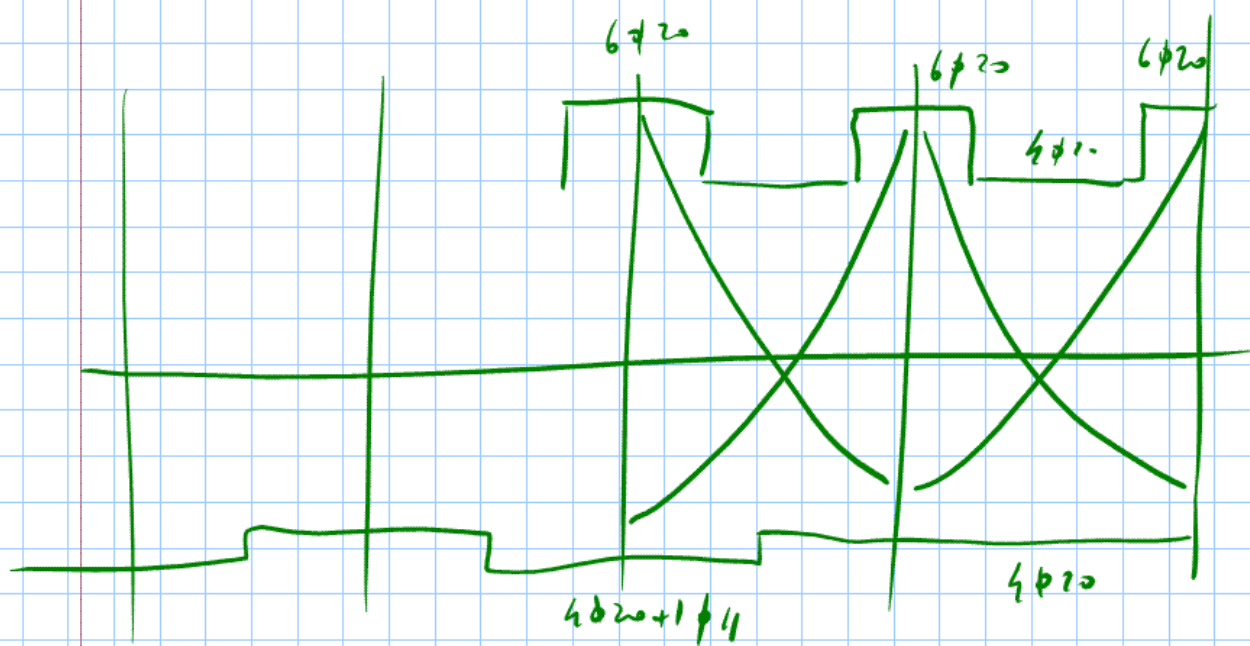
ARMATURA DISPOSTA

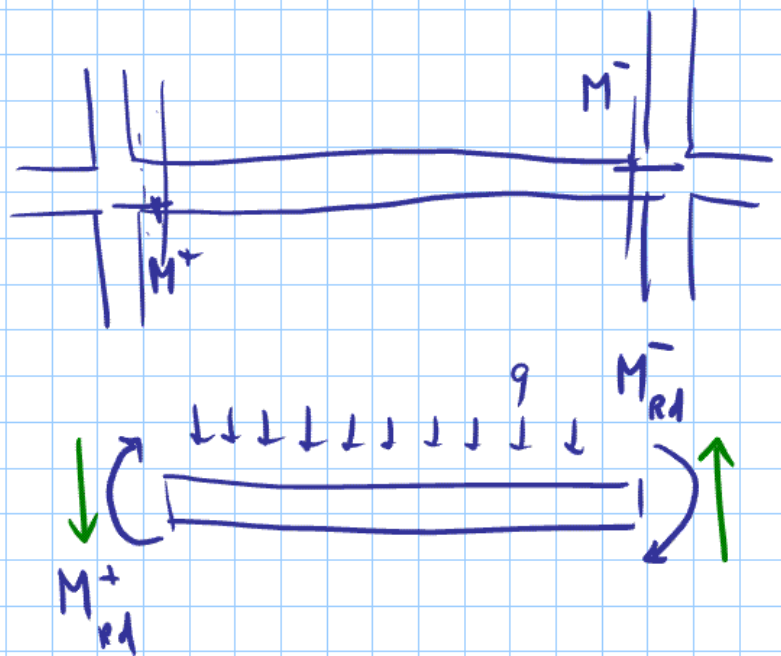
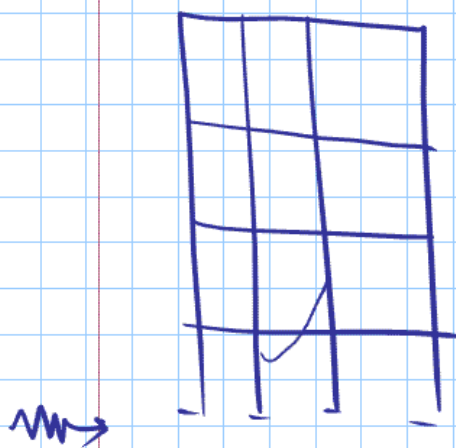
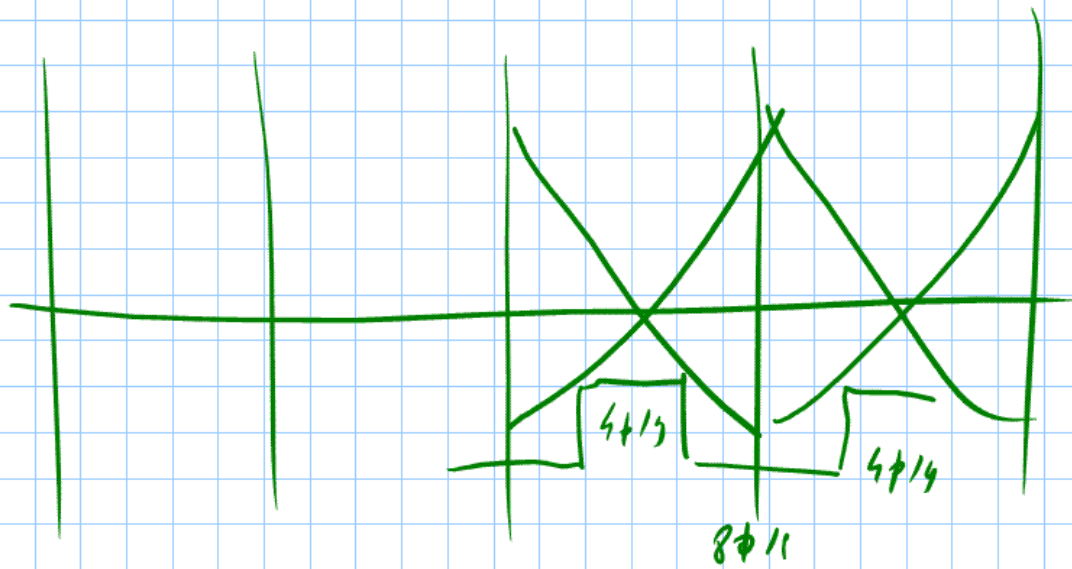


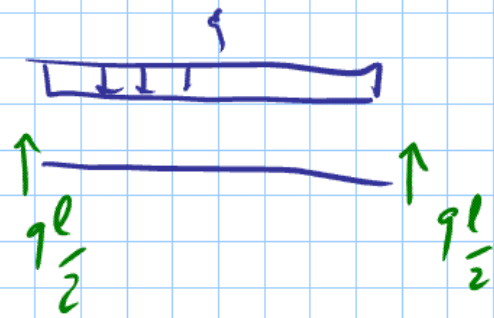
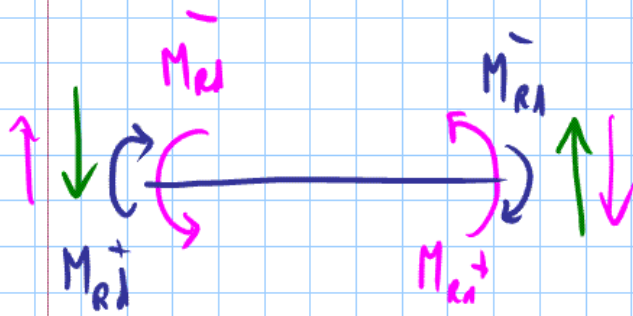
(2)



(1)



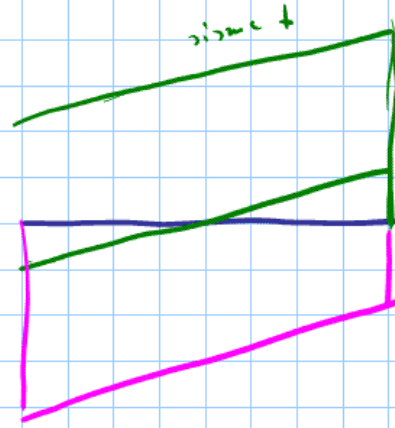




$$\frac{M_{Rd}^+ + M_{Rd}^-}{l}$$

$$V_2 = \frac{M_{Rd}^+ + M_{Rd}^-}{l} + \frac{q l}{2}$$

$$V_1 = \frac{M_{Rd}^- + M_{Rd}^+}{l} + \frac{q l}{2}$$



V

campete 25-26

153.7 ← 6 ϕ 20

6 ϕ 20 → 153.6

$q = 32.0 \text{ kN/m}$

116.8 ← 4 ϕ 20 + 1 ϕ 16

4 ϕ 20 → 104.7

$l_{net} = 3.45 \text{ m}$

$$V = \frac{153.6 + 116.8}{3.45} + \frac{32.0 \times 3.45}{2} = 133.6 \text{ kN}$$

78.4 +

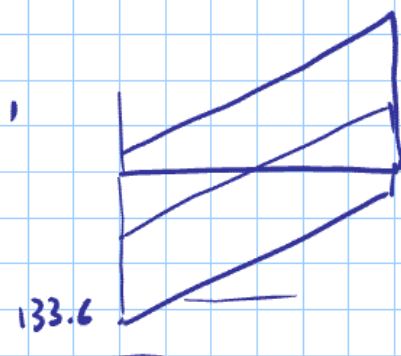
55.2

130.1

74.9

153.7 + 104.7

3.45



$$V_{Rd,max} = b z f_{cd} \frac{\cot \theta}{1 + \cot^2 \theta} = \frac{60 \times 21.6 \times 7.08 \times 0.4}{12} = 367 \text{ kV}$$

ok!

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

$$d = 24 \text{ cm}$$

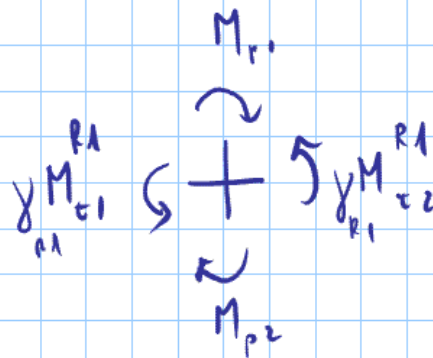
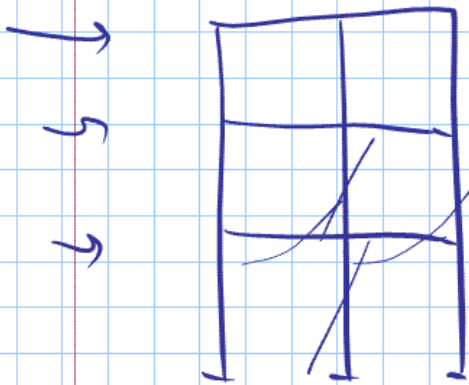
$$z = 21.6 \text{ cm}$$

$$f_{cd} = 7.08 \text{ MPa}$$

$$A_{st} = \frac{V_s}{z f_{yd} \cot \theta} = \frac{133 \times 1000}{21.6 \times 35.13 \times 2} = 7.9 \text{ cm}^2/\text{m}$$

$$\phi 8/10 \quad 26 \quad 80 \text{ cm} \quad (40 \text{ cm} < 45)$$

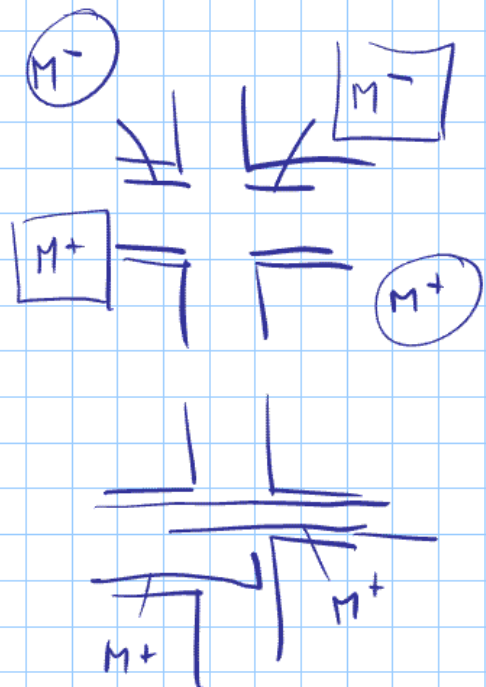
$$\phi 8/15 \quad 26$$

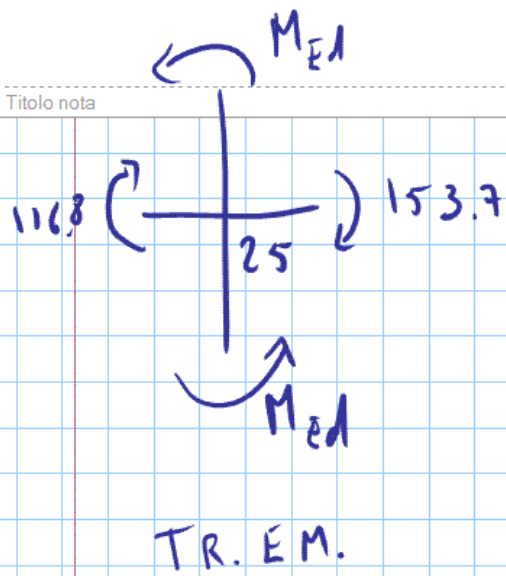


$$M_{r1} + M_{p2} \geq \gamma_{Rd} (M_{r1}^{Rd} + M_{p2}^{Rd})$$

153.7	6d20	6d20
116.8	4p20+1p14	4p20+1p14

$$(153.7 + 116.8) 1.1 = 297.6 \text{ kNm}$$





$$\Sigma M = (116.8 + 153.7) \times 1.1 = 297.6$$



$$\Sigma M \times 0.5$$

$$150 \text{ kNm}$$

$$\Sigma M \times 0.5$$

$$150 \text{ kNm}$$

TR. SP.



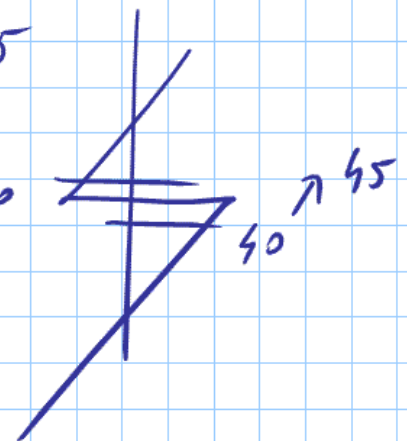
$$300 \text{ kNm}$$

0

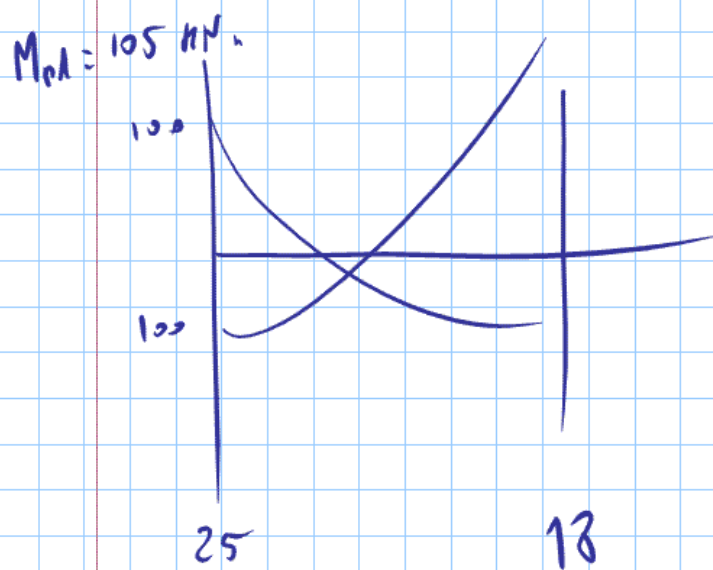
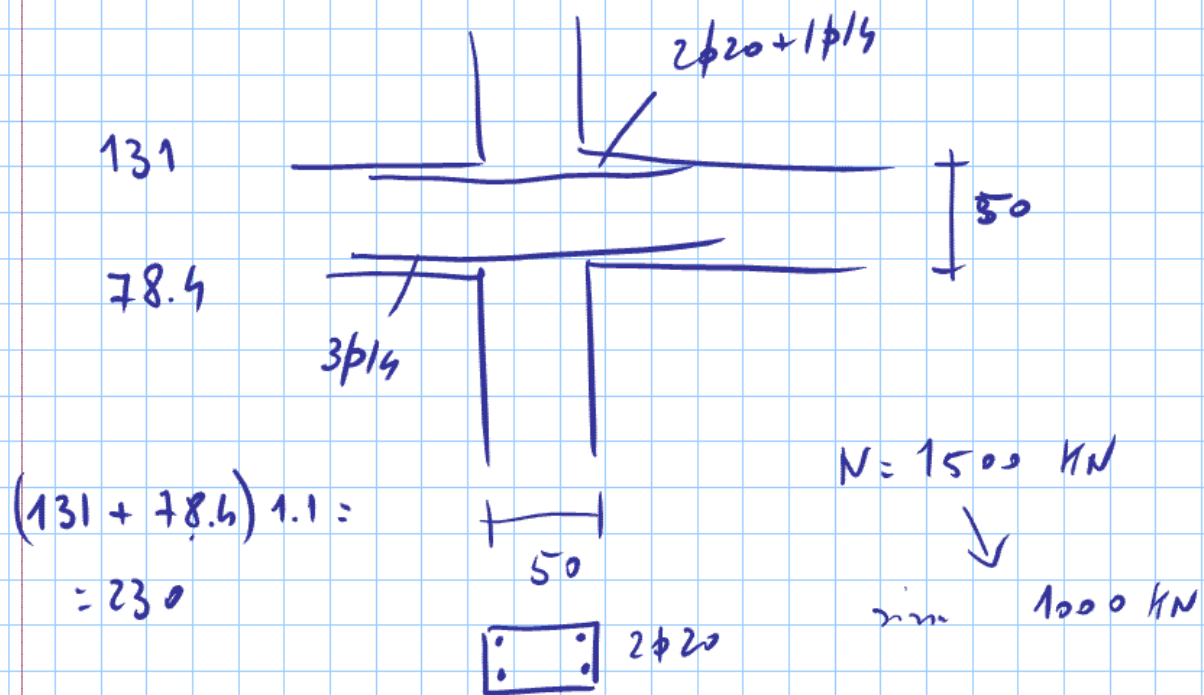
$$255$$

$$\uparrow$$

$$240$$







$$105 \times 1.1 \geq 120 \text{ kNm}$$

$$A_s = \frac{M}{\sigma_s \cdot f_{yk}} = \frac{100 \times 10}{0.9 \times 0.24 \times 391.3}$$

11.8 cm<sup>2</sup>

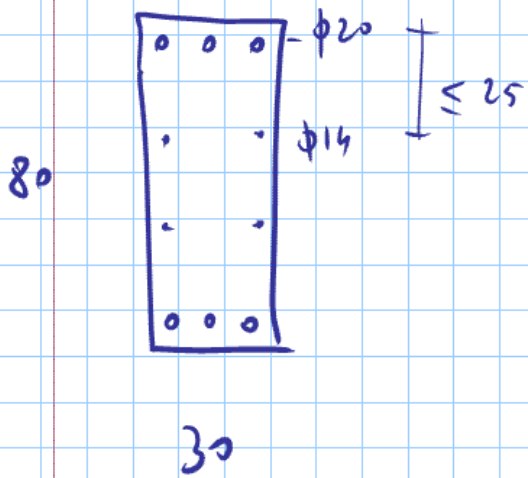
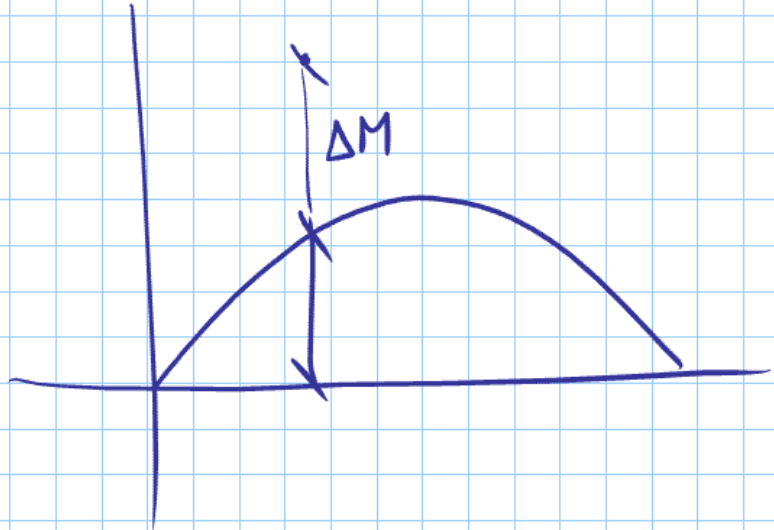
4φ20

60 kNm

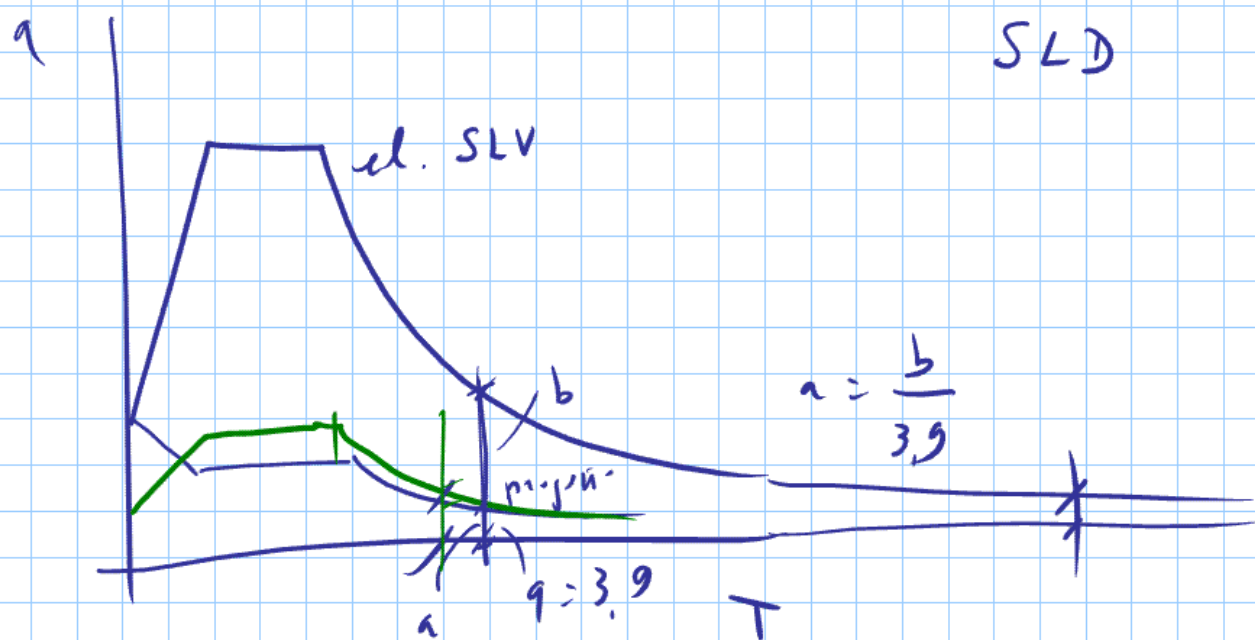
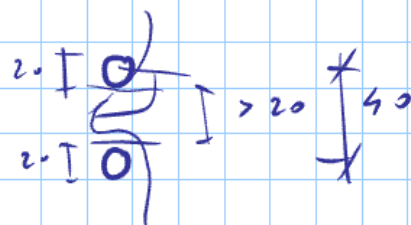
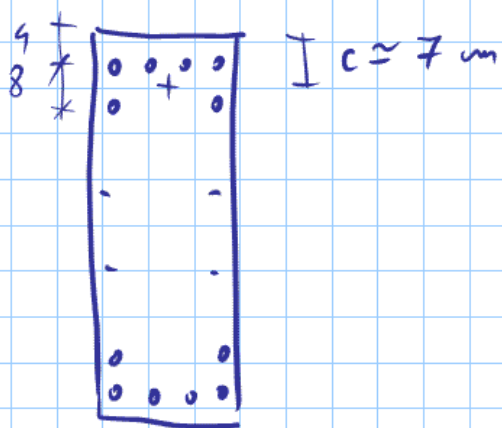


$$M_x = 255 \text{ kNm}$$

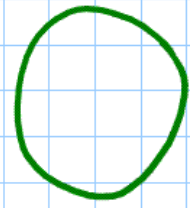
$$M_y = 20 \text{ kNm}$$



$$30 \times 80 \times 0.01 = 24 \text{ cm}^2$$



# ISOLATORI



plan.

