

COLEÇÃO 5

- 1) discutir - ver gabarito
- 2) Pré-moldada em betão contínuo - discutir
- 3) Ideal \rightarrow 3 estacas por o pilar de carga média

max. 2 diâmetros diferentes

$$\text{Pilar médio} \Rightarrow \bar{P} = 200 \text{ n} = 4000 \text{ kN}$$

$$\text{Estaca } P_{\text{nom}} = \frac{4000}{3} = 1300 \text{ kN} \Rightarrow \text{P.M. concreto } \phi 50 \text{ cm}$$

$$4) P_{\text{nom}} = P_{\text{adm}}$$

↑ ↑
estrutural geotécnica

$$\text{fórmula empírica: } L = 1,5 \bar{\sigma}_c = 1,5 \times 50 = 75 = \Sigma N_{\text{SPT}}$$

↑
kgf/cm²

portanto: 7m a partir do 2º subsolo - CONFIRMAR

COLEÇÃO 6

①

1) SP (101,28)

Decourt - Quaresma

$$P_{rup} = k' N_p \cdot A_p + p \left(1 + \frac{\bar{N}_L}{3} \right) L \left(\frac{A_p}{m^2} \right)$$

Ponta: argila siltosa : $k' = 12 \text{ tf/m}^2$

$$N_p = 12$$

$$\text{Lateral} : \bar{N}_L = \frac{5 + 8 + 7 + 15 + 9 + 12 + 21}{7}$$

$$\bar{N}_L = 11$$

$$\phi 58 \text{ cm} \Rightarrow \begin{cases} A_p = 0,264 \text{ m}^2 \\ p = 1,82 \text{ m} \end{cases}$$

$$P_{rup} = 12 \times 12 \times 0,264 + 1,82 \left(1 + \frac{11}{3} \right) \times 7,0$$

$$P_{rup} = 38 + 59 = 97 \text{ tf} = 970 \text{ kN}$$

FS=2,0
 $\rightarrow P_{adm} = 485 \text{ kN} \ll P_{nom} = 1300 \text{ kN}$

\therefore aprofundar $\Rightarrow L = 15,5 \text{ m}$

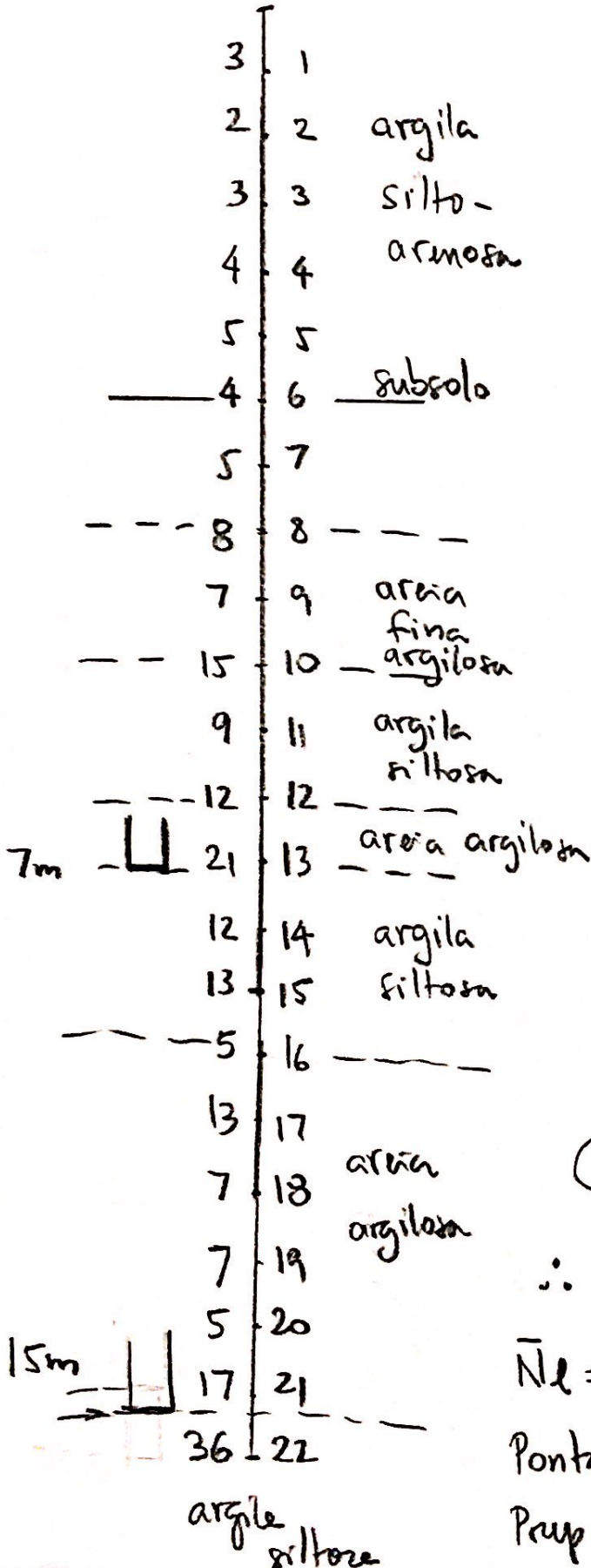
$$\bar{N}_L = 10,5 \quad N_p = 36 \quad L = 15,5 \text{ m}$$

Ponta: argila siltosa : $k' = 12 \text{ tf/m}^2$

$$P_{rup} = 114 + 127 = 241 \text{ tf} \Rightarrow P_{adm} = 1200 \text{ kN}$$

OK

NSPT z



(2)

D) cont.

se for utilizada FS parcial

$$P_{adm} = \frac{P_p}{4} + \frac{P_l}{1,3} = \frac{114}{4} + \frac{127}{1,3} = 29 + 98 = 127 \text{ tf} \\ = 1270 \text{ kN} \quad \underline{\text{OK}}$$

ADKI-VELOSO

$$P_{rup} = \frac{K N_p A_p}{F_1} + \frac{p}{F_2} \sum \beta N_l \cdot A_l \quad \text{tf/m}^2$$

Ponta: $K = 22 \text{ tf/m}^2$ argila e litor $F_1 = 1,75$ pré-moldada concreto $N_p = 36$ $A_p = 0,264 \text{ m}^2$ Lateral: $p = 1,82 \text{ m}$ $F_2 = 3,5$ pré-moldada de concreto

$$\sum \beta N_l \cdot A_l = 13 \times 0,85 + 22 \times 1,6 + 21 \times 0,85 + 21 \times 1,6 + 30 \times 0,85 + \\ + 49 \times 1,6 = 202 \text{ tf/m}$$

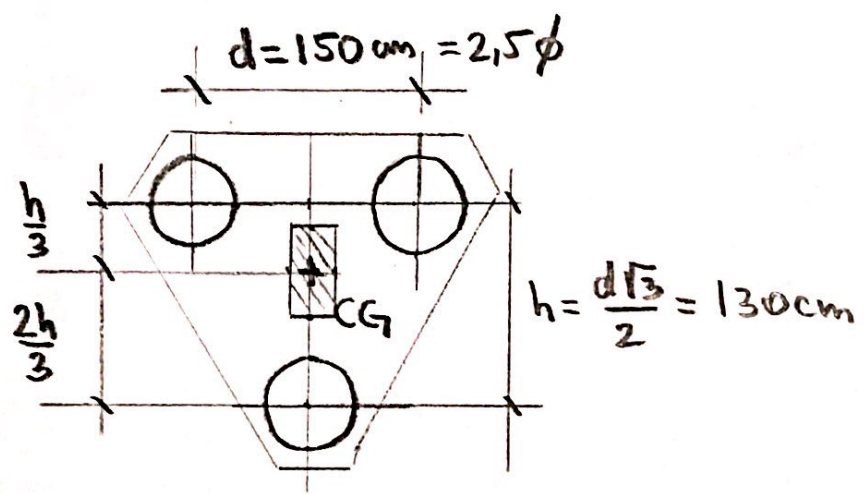
$$P_{rup} = \frac{22 \times 36 \times 0,264}{1,75} + \frac{1,82}{3,5} \times 202 = 120 + 105 = 225 \text{ tf}$$

$P_{adm} = 1125 \text{ kN} < 1300 \text{ kN} \Rightarrow$ aprofundar mais um pouco possível?

2) a) P6 e P9

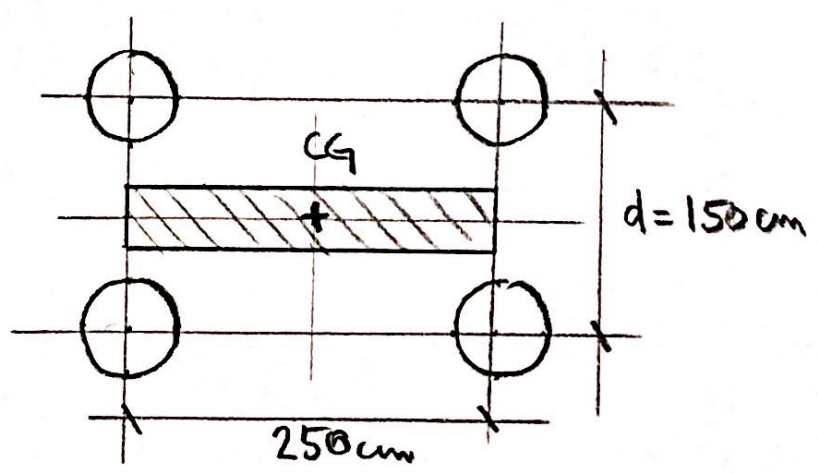
30x60cm P = 3300kN

$$n = \frac{P}{P_{nom}} = \frac{3300}{1300} = 2,5 \rightarrow 3 \text{ estacas}$$



b) P20 e P5 40x250cm P = 3100kN

$$n = \frac{3100}{1300} = 2,4 \rightarrow 4 \text{ estacas pelo formato}$$

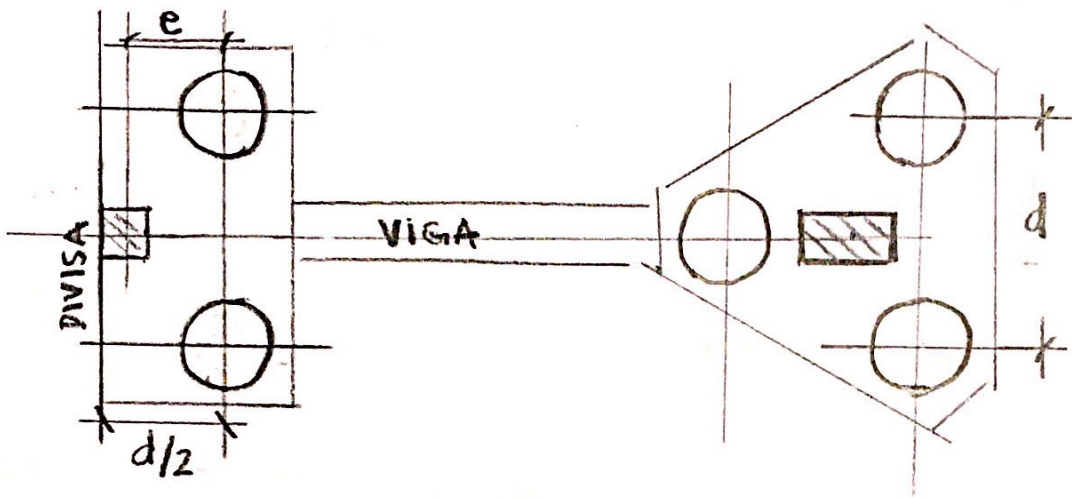


2c) P24 e P19

4

$P4 = 1500 \text{ kN}$ $30 \times 30 \text{ cm}$

$P19 = 2900 \text{ kN}$ $30 \times 60 \text{ cm}$



P24

$$d = 150 \text{ cm} = 2,5\phi \rightarrow n = \frac{P}{P_{nom}} = \frac{1500}{1300} = 2 \text{ estacas}$$

$$\frac{d}{2} = 75 \text{ cm}$$

$$e = \frac{d}{2} - \frac{b_0}{2} = 75 - 15 = 60 \text{ cm}$$

$$R = P \frac{l}{l-e} = 1500 \times \frac{5,08}{5,08-0,6} = 1700 \text{ kN} \rightarrow 2 \text{ estacas OK}$$

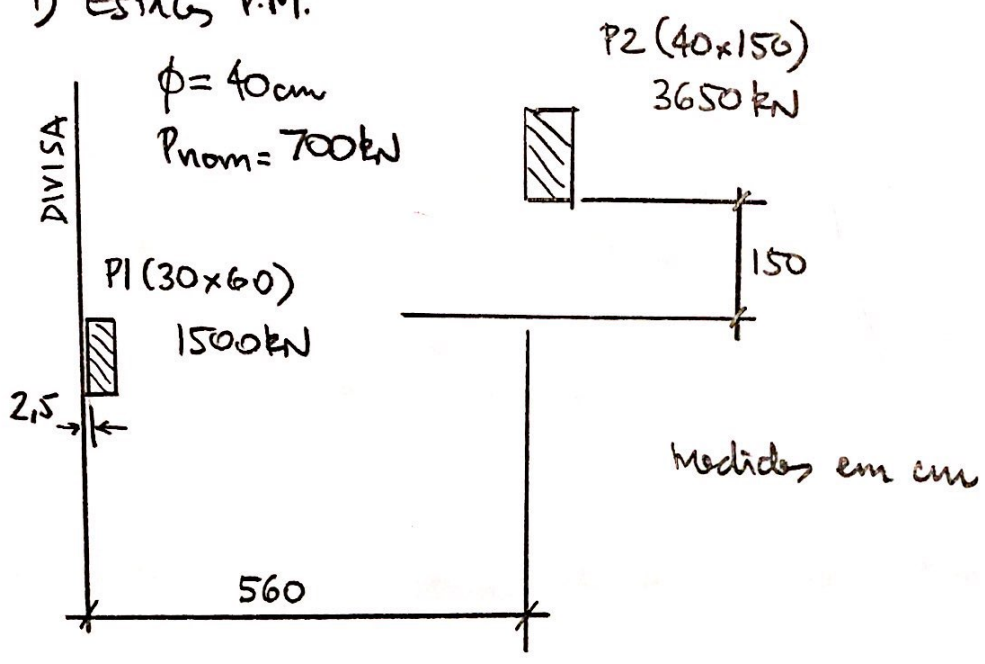
P19

$$R_{19} = P_{19} - \frac{\Delta P}{2} = 2900 - \frac{1700-1500}{2} = 2800 \text{ kN}$$

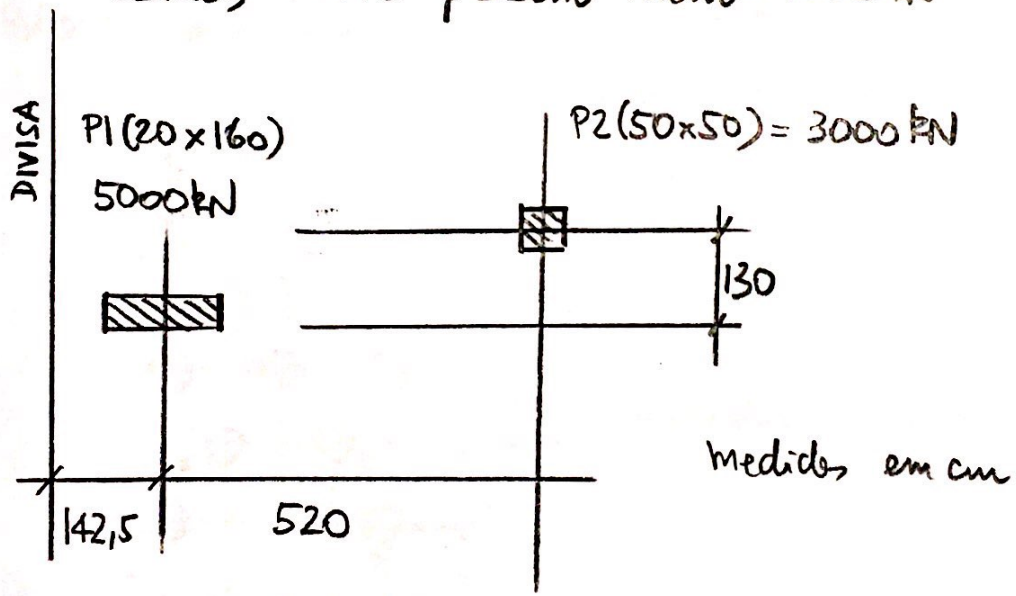
$$n = \frac{2800}{1300} = 3 \text{ estacas}$$

EX. EXTRAS

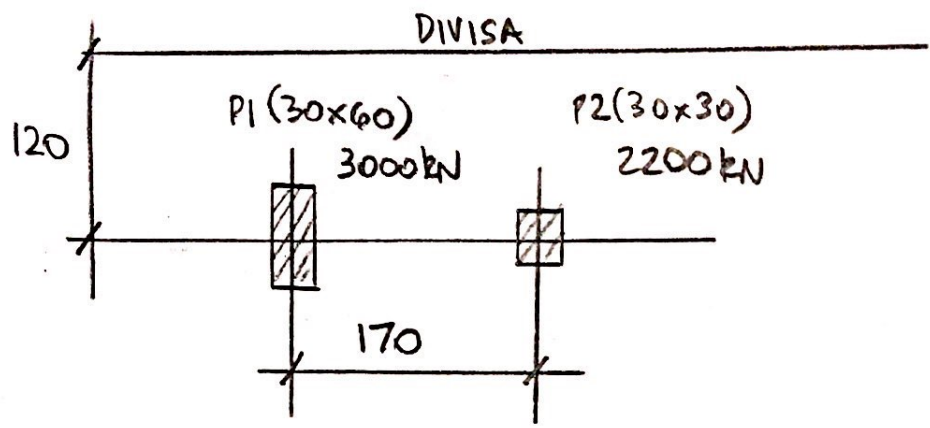
1) Estacas P.M.



2) Estacas Franki $\phi 52\text{cm}$ $P_{nom} = 1300\text{kN}$



3) Estacas PM $\phi 40$ cm $P_{nom} 700$ kN



4) Idem, porém com distância de 80cm as invs de 120cm.

5) Bloco com momento $P = 1600$ kN
 $M_x = -200$ kNm
 $M_y = +300$ kNm

