$\sigma_{r,c} = 3\ kN/cm^2$ $\qquad$ $\sigma_{e,t} = 50\ kN/cm^2$

$\gamma_c = 2,5$ $\qquad$ $\gamma_a = 2,0$

a)

CARGA NO PILAR (POR PAVIMENTO): $4 \times 180 = 720\ kN$

i) " " " (TERREO - PAV 1): $6 \times 720 = 4320\ kN$

ii) " " " (PAV 2 - COB): $1 \times 720 = 720\ kN$

i)

$$\sigma_{PILAR} = \frac{4320}{40\ b} = \frac{108}{b}$$

$$\sigma_{ARM,c} = \frac{3}{2,5} = 1,2\ kN/cm^2$$

ASSIM: $108/b \leq 1,2$

$b \geq 90\ cm$ // $\rightarrow$ $\boxed{b = 90\ cm}$

ii) $$\sigma_{PILAR} = \frac{720}{40 \cdot b} = \frac{18}{b}$$

$\sigma_{ARM,c} = 1,2\ kN/cm^2$

ASSIM: $18/b \leq 1,2$

$b \geq 15\ cm$ // $\rightarrow$ $\boxed{b = 15\ cm}$

b)

$$A_{\phi 20} = \frac{\pi d^2}{4} = \frac{\pi \times 2^2}{4} = 3{,}14\ cm^2$$

$$A_{TOTAL} = n \times 3{,}14 = 3{,}14n$$

$$\sigma_{BARRAS} = \frac{250}{3{,}14n} = \frac{79{,}6}{n}\ kN/cm^2$$

$$\sigma_{ADM,t} = \frac{50}{2} = 25\ kN/cm^2$$

ASSIM: $79{,}6n \leq 25$

$n \geq 3{,}2 \rightarrow \boxed{n = 4}$