



$$5 \qquad G_2 = 18 \text{ kN} / \text{m}^3$$

$$G = \qquad + \qquad +$$

$$W = 15 \cdot L_0$$

$$L_0 = \frac{W \cdot G / F_f = 15 \cdot A \cdot L_0 = 10 \cdot A \cdot 18 \cdot 1.5 / 10 \cdot A \cdot h_w \cdot K}{1.05 \cdot 10 \cdot 13.8 \cdot 3 \cdot 10 \cdot 0.5 \cdot 25 \cdot 18 \cdot 1.5} = 5.02 \text{ m}$$

$$L_0 = 5.5 \text{ m}$$

2

$$36 \text{ mm} \cdot 1080 \qquad 1.8 \text{ m} \times 1.8 \text{ m}$$

$$R_a = 450 \text{ kN}$$

$$2 \text{ m} \qquad 5.5 \text{ m} ( \qquad 3.5 \qquad );$$

$$110 \text{ mm} \qquad 110 \text{ mm} \qquad 180 \text{ mm}$$

III

1

$$3.5 \text{ m} \qquad N_{tk} \qquad mck \qquad a = 0.001 \times 3.14 \times 110 \times 0.3 \times 10^3 \times 1.0 \times 3.5 = 362.7 \text{ kN}$$

$$2.0 \text{ m} \qquad N_{tk} \qquad mck \qquad a = 0.001 \times 3.14 \times 110 \times 0.4 \times 10^3 \times 1.0 \times 2.0 = 276.3 \text{ kN}$$

2

$$N_{tk} = l_r \cdot l_f \cdot r_k \cdot A_{ln} = 2.6 \times 3 \times 4.24 \times 10^3 \times 15935 \times 10^{-6} = 527 \text{ kN}$$

$$A_{ln} = A_{ln} - \left( \frac{180}{2} \right)^2 - \left( \frac{110}{2} \right)^2 = 15935 \text{ mm}^2$$

3

$$K_r N_{tk} = N_{tk1} + N_{tk2} = 362.7 + 276.3 + 527 = 1166 \text{ kN}$$

$$N_{tk} = 1166 / 2 = 583 \text{ kN}$$

$$A_s-$$

$$A_{s(36)}=1017\text{mm}^2$$