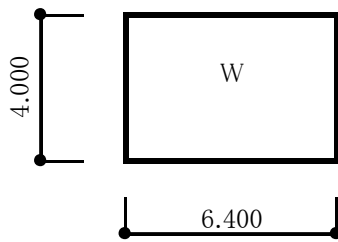


S1 ①～②間 居室



$$W = 6.10 \text{ kN/m}^2 \quad t = 15.0 \text{ cm}$$

$$\begin{aligned} W_x &= \frac{Ly^4}{Lx^4 + Ly^4} \times W \\ &= \frac{6.40^4}{4.00^4 + 6.40^4} \times 6.10 \\ &= 5.30 \text{ kN/m}^2 \end{aligned}$$

(1) 応力計算

・短辺方向端部

$$M_{x1} = 1/12 \times W_x \times Lx^2 = 1/12 \times 5.30 \times 4.00^2 = 7.1 \text{ kN}\cdot\text{m}$$

・短辺方向中央

$$M_{x2} = 1/18 \times W_x \times Lx^2 = 1/18 \times 5.30 \times 4.00^2 = 4.8 \text{ kN}\cdot\text{m}$$

・長辺方向端部

$$M_{y1} = 1/24 \times W \times Lx^2 = 1/24 \times 6.10 \times 4.00^2 = 4.1 \text{ kN}\cdot\text{m}$$

・長辺方向中央

$$M_{y2} = 1/36 \times W \times Lx^2 = 1/36 \times 6.10 \times 4.00^2 = 2.8 \text{ kN}\cdot\text{m}$$

(2) 断面検定(曲げ応力に対する検討)

短辺方向

$$dt = 4 \text{ cm} \quad d = 15 - 4 = 11 \text{ cm} \quad j = 7/8 \times 11 = 9.625 \text{ cm}$$

長辺方向

$$dt = 5 \text{ cm} \quad d = 15 - 5 = 10 \text{ cm} \quad j = 7/8 \times 10 = 8.75 \text{ cm}$$

・短辺方向端部

$$\begin{aligned} at &= M / ft \cdot j = 7.1 \times 100 / 19.5 \cdot 9.625 = 3.79 \text{ cm}^2 \\ \text{配筋: D10, D13@200} &\quad (4.95 \text{ cm}^2) \quad \text{検定比} \quad 0.77 < 1.0 \therefore \text{OK} \end{aligned}$$

・短辺方向中央

$$\begin{aligned} at &= M / ft \cdot j = 4.8 \times 100 / 19.5 \cdot 9.625 = 2.56 \text{ cm}^2 \\ \text{配筋: D10@200} &\quad (3.55 \text{ cm}^2) \quad \text{検定比} \quad 0.72 < 1.0 \therefore \text{OK} \end{aligned}$$

・長辺方向端部

$$\begin{aligned} at &= M / ft \cdot j = 4.1 \times 100 / 19.5 \cdot 8.75 = 2.41 \text{ cm}^2 \\ \text{配筋: D10@200} &\quad (3.55 \text{ cm}^2) \quad \text{検定比} \quad 0.68 < 1.0 \therefore \text{OK} \end{aligned}$$

・長辺方向中央

$$\begin{aligned} at &= M / ft \cdot j = 2.8 \times 100 / 19.5 \cdot 8.75 = 1.65 \text{ cm}^2 \\ \text{配筋: D10@200} &\quad (3.55 \text{ cm}^2) \quad \text{検定比} \quad 0.46 < 1.0 \therefore \text{OK} \end{aligned}$$

(3) せん断の検討

$$Q = W \cdot Lx / 2 = 6.10 \times 4.000 / 2 = 12.2 \text{ kN}$$

$$\tau = Q / b \cdot j = 12.2 / 100 \cdot 9.625 = 0.013 < 0.08 \text{ kN/cm}^2 \therefore \text{OK}$$

(4) 必要スラブ厚の検討

$$t = 0.02 \cdot \left[ \frac{\lambda - 0.7}{\lambda - 0.6} \right] \cdot \left[ 1 + \frac{Wp}{10} + \frac{Lx}{10000} \right] \cdot Lx$$

$$\lambda = Ly / Lx = 6400 / 4000 = 1.60$$

$$Wp = W - \gamma c \cdot t = 6.10 - 24 \times 0.15 = 2.50 \text{ kN/m}^2$$

$$\begin{aligned} t &= 0.02 \cdot \left[ \frac{1.60 - 0.7}{1.60 - 0.6} \right] \cdot \left[ 1 + \frac{2.50}{10} + \frac{4000}{10000} \right] \cdot 4000 \\ &= 119 \text{ mm} < 150 \text{ mm} \therefore \text{OK} \end{aligned}$$