

***** 獨立基礎設計 *****

F3

Cb=	40 cm	fc' =	210 kg/cm ²	Qa =	15 t/m ²
Cd=	40 cm	fy =	2800 kg/cm ²	T =	40 cm
PD=	39.5 t	PL =	3.8 t	d' =	7.5 cm

※ 檢核基礎版面積：

$$\begin{aligned} A_{req} &= (PD+PL) / Q_a = 2.9 \text{ m}^2 \\ \text{USE } &\begin{array}{cc} \text{長邊} & \text{短邊} \\ 170 & 170 \text{ cm} \end{array} > A_{req} \quad -\text{OK.} \end{aligned}$$

※ 計算設計承載力 Qu：

$$Q_u = (1.4PD + 1.7PL) / A = 21.37 \text{ t/m}^2$$

※ 檢核基礎版厚度：

穿孔剪力：

$$\begin{aligned} d &= 32.50 \text{ cm} & L_o &= 290.00 \text{ cm} \\ V_u &= Q_u (A - (C_b + d)(C_d + d)) = 50.53 \text{ t} \\ \phi V_c &= 0.85 \times 1.06 \sqrt{f_c'} \times L_o \times d = 123.06 \text{ t} \quad -\text{OK.} \end{aligned}$$

梁式剪力：

$$\begin{aligned} A' &= L (0.5 (B - C_d) - d) = 0.55 \text{ m}^2 \\ V_u &= Q_u (A') = 11.81 \text{ t} \\ \phi V_c &= 0.85 \times 0.53 \sqrt{f_c'} \times B \times d = 36.07 \text{ t} \quad -\text{OK.} \end{aligned}$$

※ 設計鋼筋量：

長向：

$$\begin{aligned} M &= 0.5 (Q_u) [0.5 (L - C_b)]^2 = 4.51 \text{ t-m/m} \\ A_s &= 7.45 \text{ cm}^2/\text{m} \\ \text{USE } \# &\begin{array}{cc} 4 & @ \end{array} 15 \quad -\text{OK.} \end{aligned}$$

短向：

$$\begin{aligned} M &= 0.5 (Q_u) [0.5 (B - C_d)]^2 = 4.51 \text{ t-m/m} \\ A_s &= 7.45 \text{ cm}^2/\text{m} \\ \text{USE } \# &\begin{array}{cc} 4 & @ \end{array} 15 \quad -\text{OK.} \end{aligned}$$