

静力平衡

$$R_A = \frac{qL}{4} + \frac{P}{2} \quad M_{max} = R_A \frac{L}{2} - q \frac{L}{4} \left(\frac{L}{4} + \frac{L}{8} \right) = L \left(\frac{P}{4} + \frac{qL}{8} \right) - \frac{3q^2 L^2}{32}$$

$q = 124 \text{ kN/m}$ $L = 9.15 \text{ m}$ $P = 13 \text{ kN}$ $q = 66 \text{ kN/m}$

Step 1: $\frac{M_{max}}{6a} = \frac{P \left(\frac{L}{4} + \frac{L}{8} \right) - \frac{3q^2 L^2}{32}}{6a} = 413.662 \text{ cm}^3$ 試 I PV 260 (Secr. 4420)

包含自重計算 $6a$

$R_A = \frac{qL}{4} + \frac{P}{2} + \frac{wL}{2}$ $w = 419 \frac{\text{kg}}{\text{m}} \cdot 9 = 410899 \text{ N/m}$

$M_{max} = R_A \frac{L}{2} - q \frac{L}{4} \left(\frac{L}{4} + \frac{L}{8} \right) - w \frac{L}{2} \times \frac{L}{4} = 561192 \text{ Nmm}$

Step 2: $\frac{M_{max}}{6a} = 453.039 < 471.9 \text{ cm}^3$ 試 I PV 260 (Secr. 55 I PV 260 不適)

試 I PV 280 Secr. 542 cm³ $w = 471.9 \frac{\text{kg}}{\text{m}} \cdot 9 = 464.939 \text{ N/m}$

$R_A = \frac{qL}{4} + \frac{P}{2} + \frac{wL}{2}$ 試 $M_{max} = R_A \frac{L}{2} - q \frac{L}{4} \left(\frac{L}{4} + \frac{L}{8} \right) - w \frac{L}{2} \times \frac{L}{4} = 56576 \text{ Nmm}$

Step 3: $\frac{M_{max}}{6a} = 458.16 \text{ cm}^3 < 471.9 \text{ cm}^3$ 試 I PV 280 (Secr. 55 I PV 280 不適)

