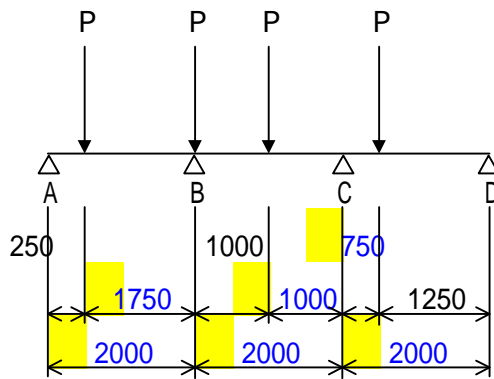


覆工受桁の検討

活荷重による断面力

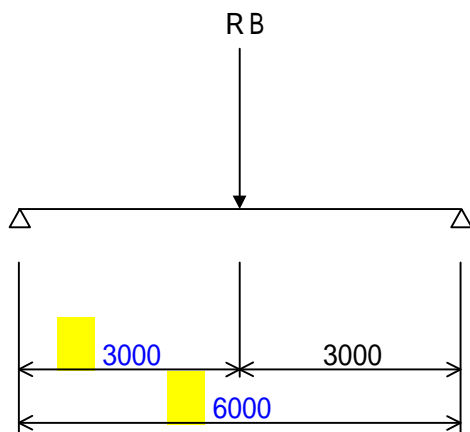


$$P = 10.000 \text{ tf}$$

B点の覆工受桁に作用する荷重は、

$$RB = \frac{1}{2.000} \times 10.000 \times (2.000 + 0.250 + 1.000) = 16.250 \text{ tf}$$

曲げモーメント



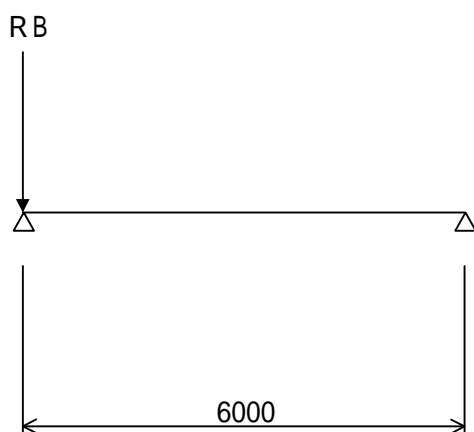
$$MI = \frac{16.250 \times 6.000}{4} \times \left(\frac{6.000}{32} + \frac{7}{8} \right)$$

$$= 25.898 \text{ tf} \cdot \text{m}$$

$$MI+i = 25.898 \times \left(1 + 0.3 \right)$$

$$= 33.667 \text{ tf} \cdot \text{m}$$

せん断力



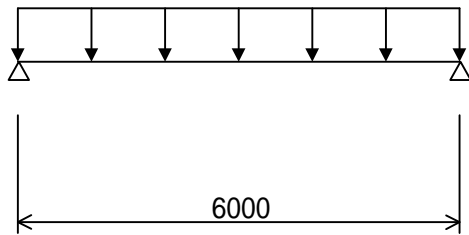
$$SI = 16.250 \times \left(\frac{6.000}{32} + \frac{7}{8} \right)$$

$$= 17.266 \text{ tf}$$

$$SI+i = 17.266 \times \left(1 + 0.3 \right)$$

$$= 22.446 \text{ tf}$$

死荷重による断面力



$$\begin{aligned} \text{覆工板} &= 0.220 \times 2.000 = 0.440 \text{ tf/m} \\ \text{覆工受桁} &= 0.200 \text{ tf/m} \\ \hline \text{wd} &= 0.640 \text{ tf/m} \end{aligned}$$

曲げモーメント

$$M_d = \frac{W \cdot L^2}{8} = \frac{0.640 \times 6.000^2}{8} = 2.880 \text{ tf} \cdot \text{m}$$

せん断力

$$S_d = \frac{W \cdot L}{2} = \frac{0.640 \times 6.000}{2} = 1.920 \text{ tf}$$

断面力の合計

曲げモーメント

$$M = M_{l+i} + M_d = 33.667 + 2.880 = 36.547 \text{ tf} \cdot \text{m}$$

せん断力

$$S = S_{l+i} + S_d = 22.446 + 1.920 = 24.366 \text{ tf}$$

応力度の照査

使用鋼材 H - 350 × 350 × 12 × 19 (SS400)

$$\text{断面係数} \quad Z = 2280 \text{ cm}^3$$

$$\text{断面二次モーメント} \quad I = 39800 \text{ cm}^4$$

$$\text{せん断抵抗面積} \quad A_w = (35.0 - 2 \times 1.9) \times 1.2 = 37.44 \text{ cm}^2$$

許容曲げ応力度

$$\text{圧縮フランジ固定点間距離} \quad l' = 6.000 \text{ m}$$

$$\text{圧縮フランジ幅} \quad B = 35.0 \text{ cm}$$

$$\frac{l'}{B} = \frac{600.0}{35.0} = 17.143 \quad 4.5 < l'/B < 30 \text{ より}$$

$$b_a = \{1400 - 24 \times (l'/B - 4.5)\} \times 1.5 = 1645 \text{ kgf/cm}^2$$

< 曲げ応力度 >

$$b = \frac{M_{\max}}{Z} = \frac{36.547 \times 10^5}{2280} = 1603 \text{ kgf/cm}^2 < b_a = 1645 \text{ kgf/cm}^2$$

" O.K "

< せん断応力度 >

$$= \frac{S_{\max}}{A_w} = \frac{24.366 \times 10^3}{37.44} = 651 \text{ kgf/cm}^2 < a = 1200 \text{ kgf/cm}^2$$

" O.K "

たわみの検討

衝撃を含まない荷重によるたわみ量

$$= \frac{P \cdot L^3}{48 \cdot E \cdot I} = \frac{17.266 \times 10^3 \times 600.0^3}{48 \times 2.1 \times 10^6 \times 39800} = 0.93 \text{ cm} < 2.5 \text{ cm}$$

$$\frac{\quad}{L} = \frac{0.93}{600.0} = \frac{1}{645} < \frac{1}{400}$$

" O.K "