7.終局強度の検討

7-1 部材の曲げ破壊耐力

$$\left(d=T-c-\frac{\Phi}{2}=100_{mm}-2.5_{cm}-\frac{10.8_{mm}}{2}=6.96_{cm} \right)$$

$$M_B=\left(d-\frac{k\times A_s\times \sigma_{sy}}{2\times B\times F_c} \right)\times k\times A_s\times \sigma_{sy}$$

$$=\left(6.96_{cm}-\frac{6\times 69.68_{kg}\times 150}{2\times 100\times 400_{kg/cm}} \right)\times 6\times 69.68_{kg}\times 150$$

$$=3.873_{t\cdot m} \quad > \quad M_u=1.880_{t\cdot m} \qquad \text{OK}$$

7-2 部材のせん断破壊耐力

$$Q_s=\frac{b\times I\times \Phi\times \sigma_t}{S}$$

$$=\frac{40.8_{cm}\times 7706_{cm^4}\times 0.5\times (0.07_{kg/cm^2}\times 400)}{1077_{cm^3}}$$

$$=4.087_t \quad > \quad Q_u=2.154_t$$

8．たわみの検討

8-1 部材のむくり

$$\delta_1=-\frac{\Sigma p\times e\times L^2}{8\times E\times I}=-\frac{(6\times 6656_{kg})\times 1.95_{cm}\times (3.85_m)^2}{8\times (3.2\times 10^5)_{kg/cm^2}\times 7706_{cm^4}}=-0.585_{cm}$$

8-2 固定荷重によるたわみ

$$\delta_2=\frac{5\times W_d\times L^4}{384\times E\times I}$$

$$=\frac{5\times 0.179_{t/m}\times (3.85_m)^4}{384\times (3.2\times 10^5)_{kg/cm^2}\times 7706_{cm^4}}=0.208_{cm}$$