Analisis Balok Beton Bertulang

March 1, 2022

1 Parameter desain:

$$f_y = 420.000 \text{ MPa} \text{ (tegangan leleh baja)}$$

$$f_c = 28.000 \text{ MPa} \text{ (kuat tekan beton)}$$

$$b = 300.000 \text{ mm} \text{ (lebar penampang)}$$

$$d = 430.000 \text{ mm} \text{ (tinggi efektif)}$$

$$A_s = 1530.000 \text{ mm}^2 \text{ (luas tulangan total)}$$

2 Momen nominal

$$\begin{aligned} a &= \frac{A_s \cdot f_y}{0.85 \cdot f_c \cdot b} \\ &= \frac{1530.000 \text{ mm}^2 \cdot 420.000 \text{ MPa}}{0.85 \cdot 28.000 \text{ MPa} \cdot 300.000 \text{ mm}} \\ &= 90.000 \text{ mm} \end{aligned}$$

$$\begin{aligned} M_n &= A_s \cdot f_y \cdot \left(d - \frac{a}{2}\right) \\ &= 1530.000 \text{ mm}^2 \cdot 420.000 \text{ MPa} \cdot \left(430.000 \text{ mm} - \frac{90.000 \text{ mm}}{2}\right) \\ &= 247.401 \text{ kN} \cdot \text{m} \end{aligned}$$