

Workshop Approximate Answers

Bending

Moment of Inertia (I) = $24.2 \times 10^9 \text{ mm}^4$ ($2.82 \times 10^6 \text{ cm}^4$)

Loading (Dead) = 9.2 kN/m

Loading (Live) = 6 kN/m

Deflection Dead Load = 49 mm

Deflection 10% Live Load = 3 mm

Total Dead + Live Deflection = 52 mm

Torsion

Torsion Moment (centre span) = 473 kNm

Torsion constant = $3.6 \times 10^9 \text{ mm}^4$ ($363 \times 10^3 \text{ cm}^4$)

Rotation (centre span) = 0.015 radians

Deflection at outer edge ($\text{Ø} \times \text{width}/2$) = 40 mm (dead)

Deflection at outer edge = 2.6 mm (10% live)

Total Dead + Live Deflection = 43 mm