ANSWERS - VOLUME2: STRESSES, STRAINS, DISPLACEMENTS

Chapter 4, Members Subject to Bending and Extension

problem 4.022, page 240

Remarks: See § 4.4, pages 168 till 170 See §4.6, pages 184 till 186

Comments:

$$\sigma = \frac{Mz}{I_{zz}}$$
 or $\sigma = \frac{M}{W}$

Answer:

 $\sigma_{\rm max} = \pm 2,4 \text{ N/mm}^2$ (Tension above and compression below)

Explanation:

The maximum bending moment in cross-section:

$$M_{\text{max}} = (1680 \text{ Nm}) + (720 \text{ Nm}) = 2400 \text{ Nm} \ (\frown)$$

Properties of the cross-section:

$$I = 50 \times 10^6 \text{ mm}^4 \text{ and } W = 10^6 \text{ mm}^3$$

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