Chapter 5, Shear Forces and Shear Stresses Due to Bending

Remarks: See §5.4.1, example 2, pages 311 till 316

Answer:

$$a = 0$$

Explanation:

Cross-section properties:

$$I = 1,2 \times 10^9 \text{ mm}^4$$

 $S^a = 4.1 \times 10^6 \text{ mm}^3$

Maximum shear force: $V_{\text{max}} = 22000 \text{ N}$

Maximum shear stress:

$$\tau_{\text{max}} = \frac{(22000 \text{ N})(4,1 \times 10^6 \text{ mm}^3)}{(120 \text{ mm})(1,2 \times 10^9 \text{ mm}^4)} = 0,63 \text{ N/mm}^2 < \overline{\tau} = 0,7 \text{ N/mm}^2$$

The maximum shear stress is below the given limiting value, there is no need for extra provisions

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