Chapter 21
Wing spars and box beams
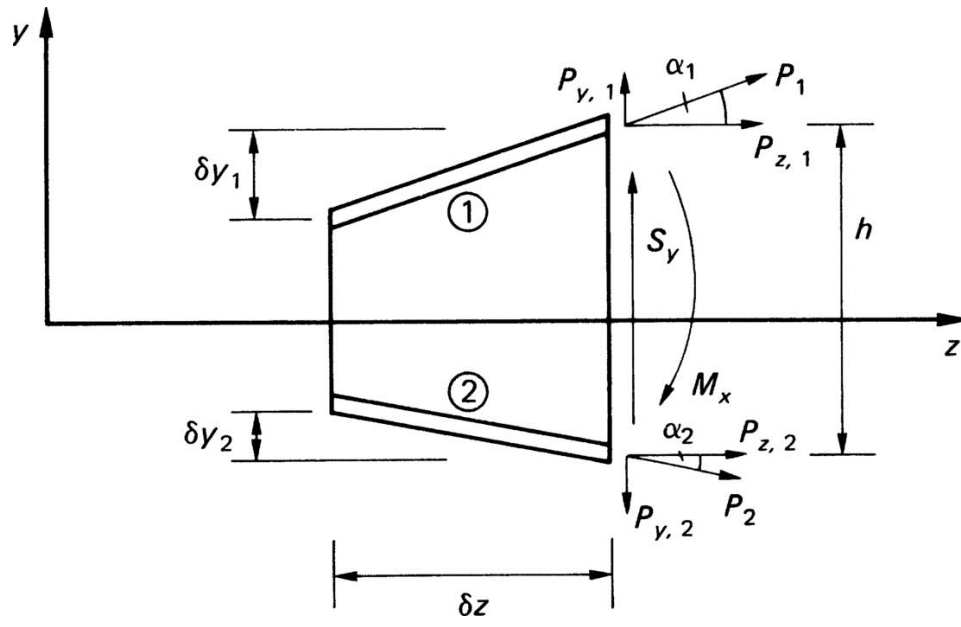
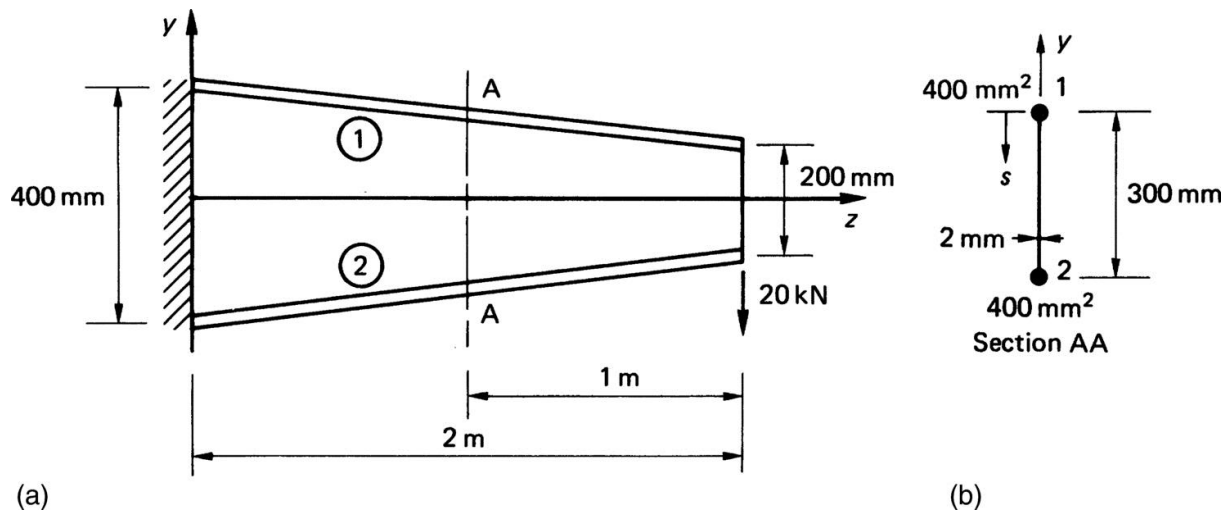**FIGURE 21.1** Effect of Taper on Beam Analysis

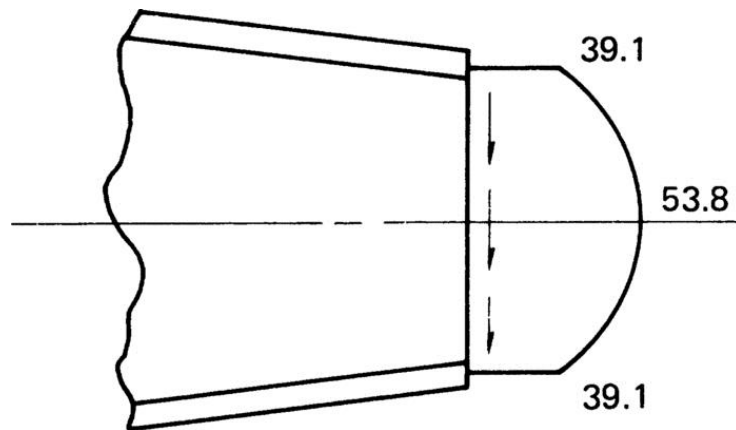**FIGURE 21.2** Tapered Beam of Example 21.1

FIGURE 21.3 Shear Flow (N/mm) Distribution at Section AA in Example 21.1
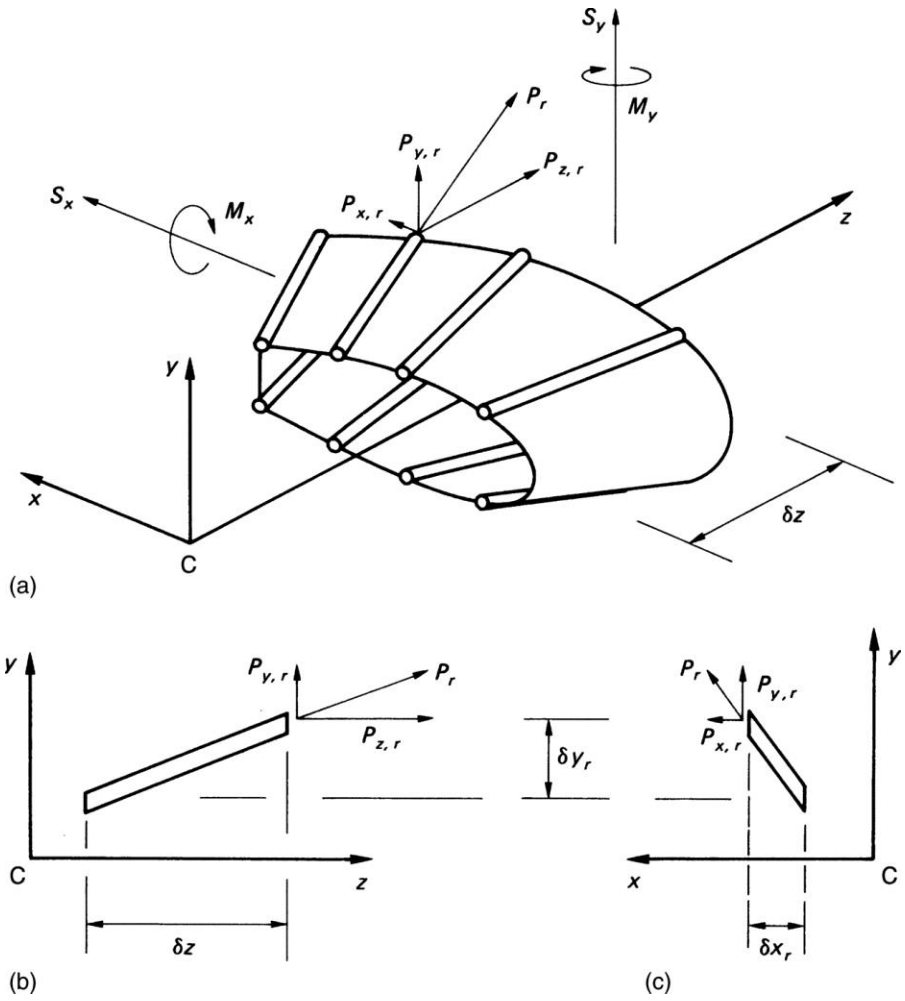
FIGURE 21.4 Effect of Taper on the Analysis of Open and Closed Section Beams
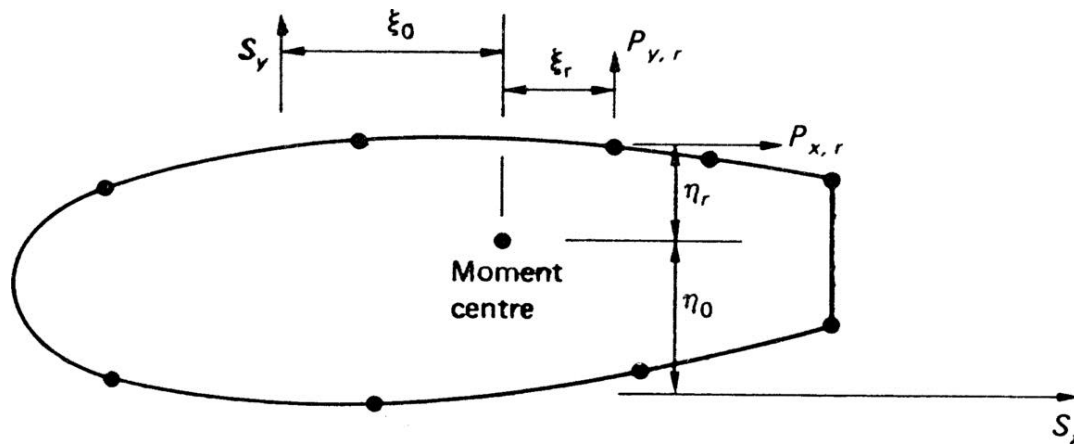
FIGURE 21.5 Modification of Moment Equation in Shear of Closed Section Beams Due to Boom Load
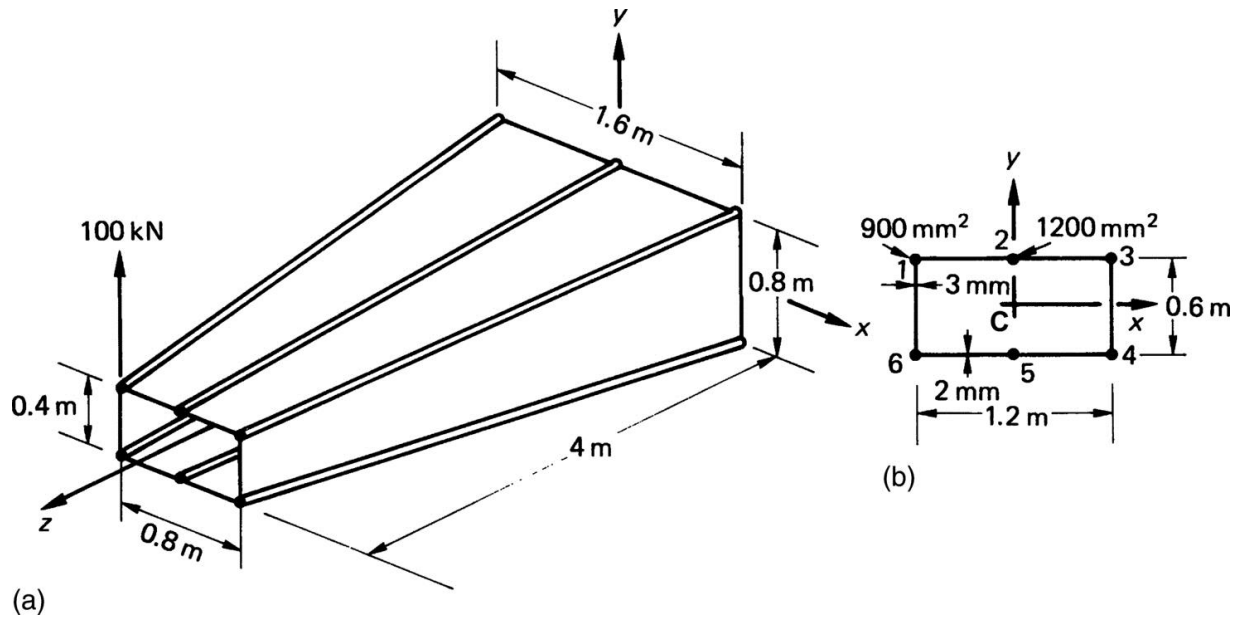
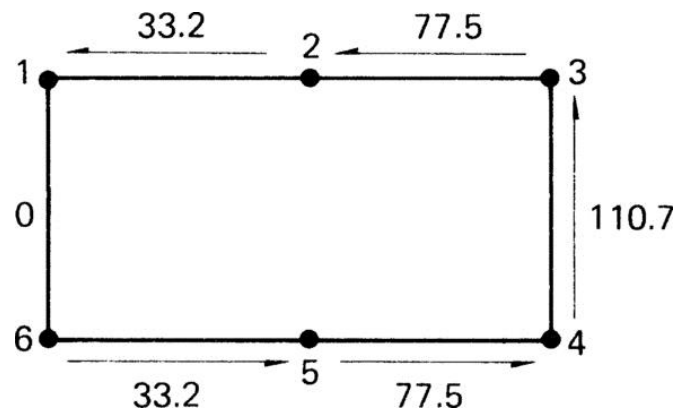**FIGURE 21.6** (a) Beam of Example 21.2; (b) Section 2 m from Built-in End

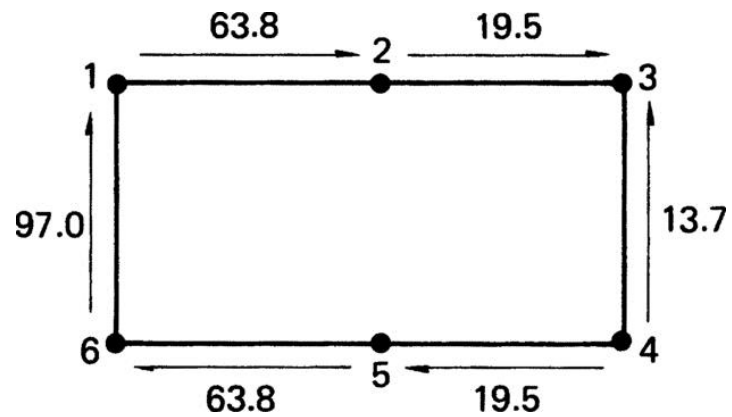**FIGURE 21.7** "Open Section" Shear Flow (N/mm) Distribution in Beam Section of Example 21.2

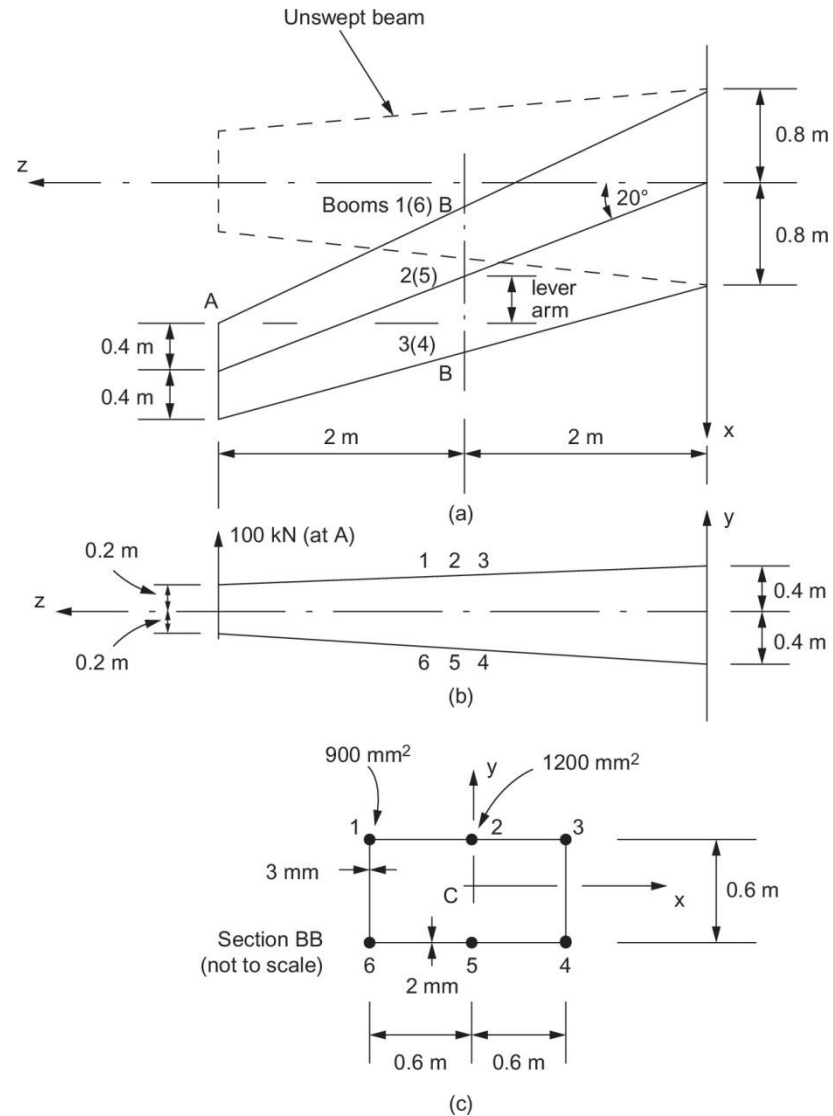**FIGURE 21.8** Shear Flow (N/mm) Distribution in Beam Section of Example 21.2

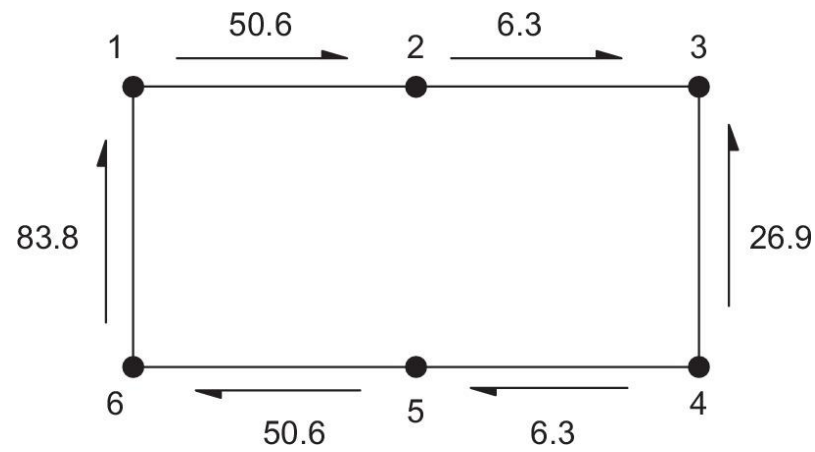FIGURE 21.9 Box Beam of Example 21.3

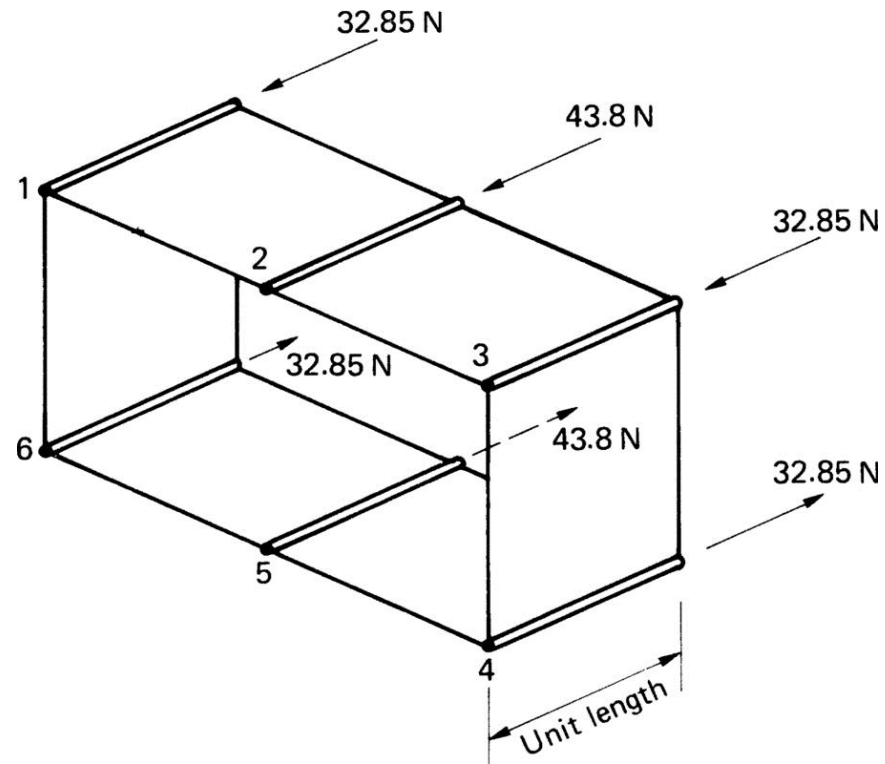**FIGURE 21.10** Shear Flow (N/mm) Distribution at Section BB in Box Beam of Example 21.3
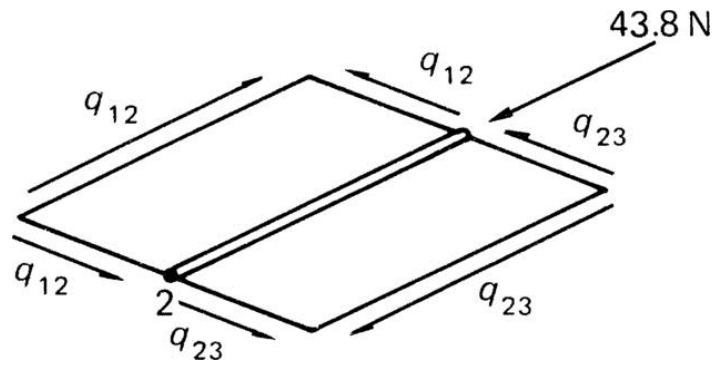
FIGURE 21.11 Change in Boom Loads/Unit Length of Beam
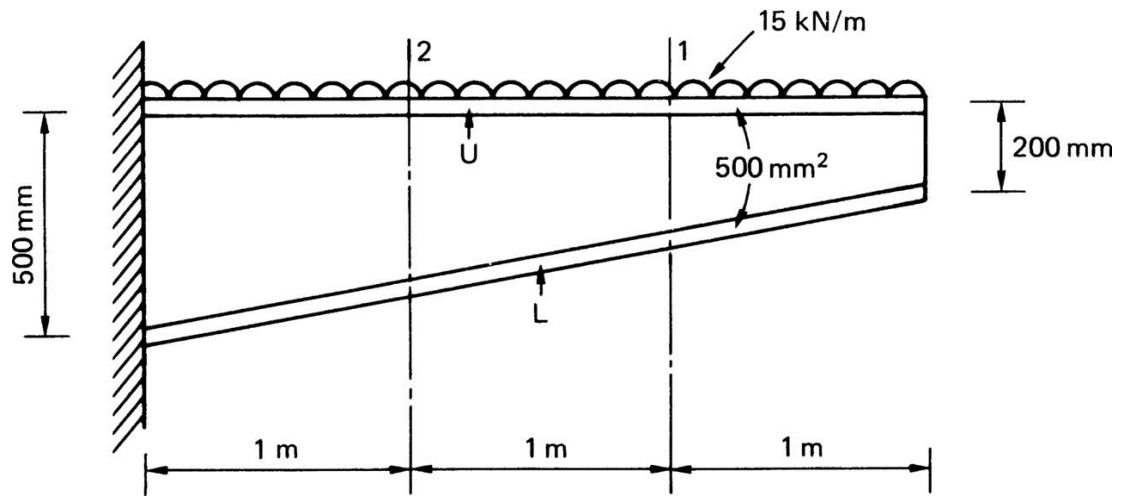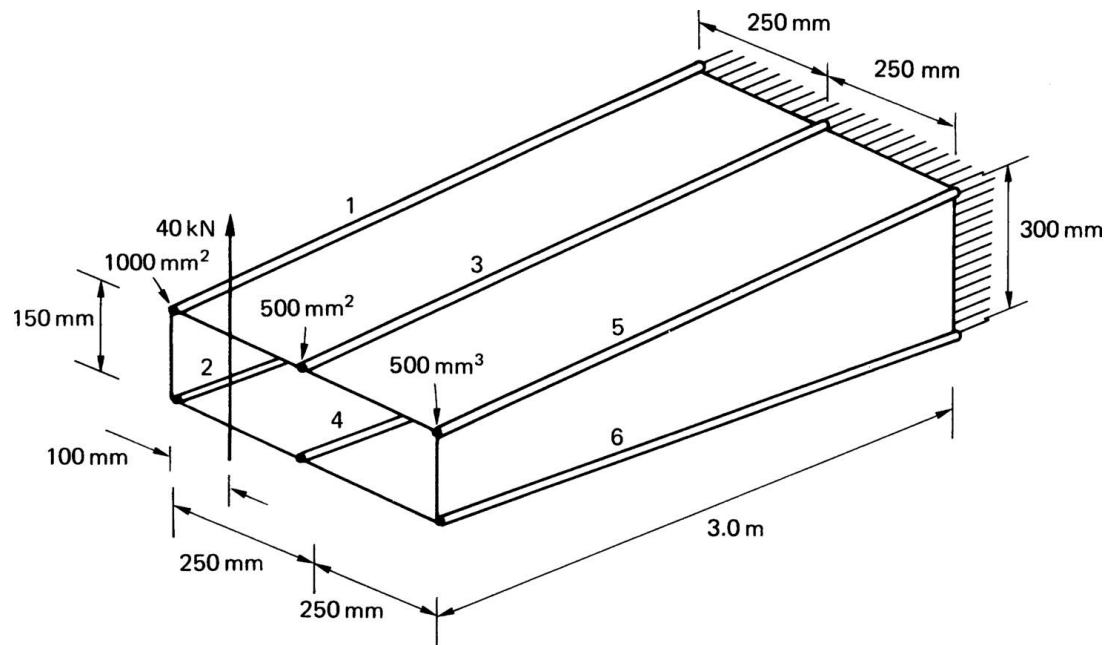
FIGURE 21.12 Equilibrium of Boom
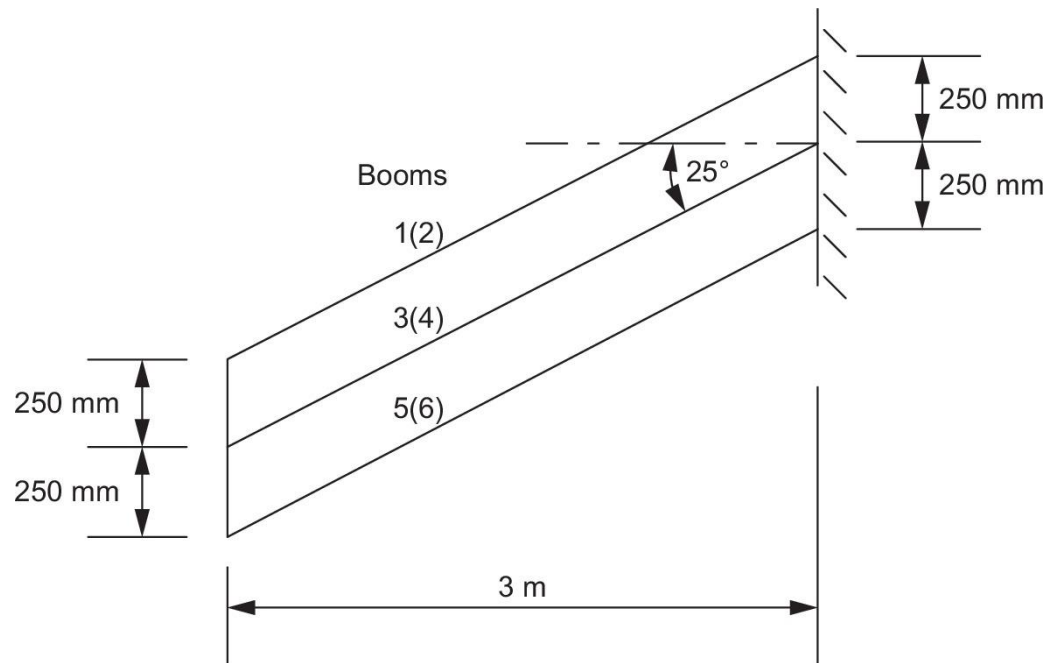
FIGURE P.21.1

FIGURE P.21.3

FIGURE P.21.4