7-6, 7 and 11

7.6 Invert the plane stress form of Hooke's law (7.2.2) and express the stresses in terms of the strain components

$$\sigma_x = \frac{E}{1-\nu^2}\left(e_x + \nu e_y\right)$$

$$\sigma_y = \frac{E}{1-\nu^2}\left(e_y + \nu e_x\right)$$

$$\tau_{xy} = \frac{E}{1+\nu} e_{xy}$$

7.7 Using the results from Exercise 7.6, eliminate the stresses from the plane stress equilibrium equations and develop Navier equations (7.2.5). Also, formally establish the Beltrami–Michell equation (7.2.7).

7.11 Verify the validity of the transformation relations given in Table 7.1 by:

(a) Transforming the plane strain equations (7.1.5) and (7.1.7) into the corresponding plane stress results.

(b) Transforming the plane stress equations (7.2.5) and (7.2.7) into the corresponding plane strain results.