Using (13) and (14) in conjunction with the yield criteria, equation (8), the following stress difference is obtained.

$$\sigma_r - \sigma_\theta = \frac{\bar{\sigma}\,(\epsilon_\theta - \epsilon_r)}{\sqrt{3}\left[\epsilon_r^2 + \epsilon_r\,\epsilon_\theta + \epsilon_\theta^2 + \frac{1}{4}\gamma_{rz}^2\right]^{1/2}} \qquad (15)$$

Substituting (15) into (14) yields

$$\tau_{rz} = \frac{\bar{\sigma}\,(\gamma_{rz})}{2\sqrt{3}\left[\epsilon_r^2 + \epsilon_r\,\epsilon_\theta + \epsilon_\theta^2 + \frac{1}{4}\gamma_{rz}^2\right]^{1/2}} \qquad (16)$$

Equations (15) and (16) can be expressed in terms of the effective strain as

$$\sigma_r - \sigma_\theta = \frac{2\bar{\sigma}}{3\bar{\epsilon}}\,(\epsilon_r - \epsilon_\theta) \qquad (17)$$

$$\tau_{rz} = \frac{\bar{\sigma}}{3\bar{\epsilon}}\,(\gamma_{rz}) \qquad (18)$$