

The following equations closely approximate the AASHTO curves shown in Figure C14.7.5.3.3-1 in the AASHTO LRFD Bridge Design Specifications.

To evaluate the equations, stress should be in psi. The value for strain is in percent.

### 70 DUROMETER COMPRESSIVE STRAIN EQUATIONS

Shape Factor (SF)  $\leq$  6.0

$$\varepsilon = C\sigma^x \quad C = 0.05 * \left(\frac{\sigma}{600}\right)^{0.15} \quad x = 0.65 \left(\frac{SF}{6}\right)^{1.0-0.0004*\sigma}$$

Shape Factor (SF)  $>$  6.0

$$\varepsilon = C\sigma^x \quad C = 0.5 * \left(\frac{\sigma}{1000}\right)^{0.5} \quad x = 0.25 \left(\frac{SF}{12}\right)^{0.4}$$

### 60 DUROMETER COMPRESSIVE STRAIN EQUATIONS

Shape Factor (SF)  $\leq$  6.0

$$\varepsilon = C\sigma^x \quad C = 0.065 * \left(\frac{\sigma}{600}\right)^{0.15} \quad x = 0.60 \left(\frac{SF}{6}\right)^{0.725}$$

Shape Factor (SF)  $>$  6.0

$$\varepsilon = C\sigma^x \quad C = 0.65 * \left(\frac{\sigma}{1000}\right)^{0.5} \quad x = 0.25 \left(\frac{SF}{12}\right)^{0.15}$$

### 50 DUROMETER COMPRESSIVE STRAIN EQUATIONS

Shape Factor (SF)  $\leq$  6.0

$$\varepsilon = C\sigma^x \quad C = 0.10 * \left(\frac{\sigma}{600}\right)^{0.15} \quad x = 0.60 \left(\frac{SF}{6}\right)^{0.725}$$

Shape Factor (SF)  $>$  6.0

$$\varepsilon = C\sigma^x \quad C = 0.6 * \left(\frac{\sigma}{1000}\right)^{0.5} \quad x = 0.275 \left(\frac{SF}{12}\right)^{0.15}$$

#### Revisions:

June 2006

Added explanatory notes defining the intent of the equations and the units for stress & strain.