

PORTLAND CEMENT CONCRETE MIX DESIGN¹ (Continued)
DETERMINATION OF MINIMUM MIX DESIGN COMPRESSIVE STRENGTH

• **MINIMUM MIX DESIGN COMPRESSIVE STRENGTH (f_m)**

Computed values from page 4:

$$\bar{x} = \underline{24.20} \text{ (MPa)} \quad s = \underline{1.0638}$$

Where:

s = The sample standard deviation of the 28-day compressive strength test results from page 4.

\bar{x} = The mean of the 28-day compressive strength test results from page 4.

V = The coefficient of variation² expressed as a decimal and calculated as follows:

$$V = \frac{s}{\bar{x}} = \frac{1.0638}{24.20} = \underline{0.044} \text{ or } 0.15$$

$$f_m = \frac{f_c}{1 - kV} = \frac{25}{1 - 1.28(0.044)} = \underline{26.49} \text{ (Mpa)}$$

Where:

f_c = The 28-day design compressive strength specified in the contract.

k = A constant (1.28) for a probability that not more than 1 in 10 tests will fall below the specified compressive strength (f_c).

¹ For normal mass portland cement concrete (2300 - 2500 kg/m³).
² Use 0.15 for the coefficient of variation when there is insufficient test data available.