

Concrete	Yield Strength, $f_c'$ (MPa)	Modulus of Elasticity, $E_c$ (MPa)	Modulus of Rupture, $f_r$ (MPa)
Class C	28	25 400	3.334
Class A	24	23 520	3.086
Class B	21	22 000	2.887

*Notes:*

1. *Thermal coefficient of expansion =  $10.8 \times 10^{-6}/^{\circ}\text{C}$*
2. *Shrinkage coefficient = 0.0002 after 28 days*  
*= 0.0005 after 1 year*
3. *Normal weight concrete density =  $2400 \text{ kg/m}^3$  for computing loads*  
*=  $2320 \text{ kg/m}^3$  for computing properties*

## MATERIAL PROPERTIES OF CONCRETE

**Figure 62-1A**