### 8.5 Biaxial Bending in the absence of axial force

In this section:

$\phi$ = 0.9 (Table 3.4 of AS 4100)

$M_x^*$ = design bending moment about the major principal x-axis

$\phi M_{sx}$ = design section moment capacity for bending about the major principal x-axis

$M_y^*$ = design bending moment about the minor principal y-axis

$\phi M_{sy}$ = design section moment capacity for bending about the minor principal y-axis

For a member subject to biaxial bending without any axial force, the following conditions defined in Sections 8.5.1 and 8.5.2 must be satisfied.

#### 8.5.1 Section Capacity

The following equation must be satisfied at all points along the member:

$$\frac{M_x^*}{\phi M_{sx}} + \frac{M_y^*}{\phi M_{sy}} \le 1 \qquad \text{(Clause 8.3.4 of AS 4100)}$$

Alternatively, for doubly symmetric I-sections, which are compact about both the x- and y-axes, sections at all points along the member shall satisfy:

$$\left(\frac{M_x^*}{\phi M_{sx}}\right)^{1.4} + \left(\frac{M_y^*}{\phi M_{sy}}\right)^{1.4} \le 1 \qquad \text{(Clause 8.3.4 of AS 4100)}$$

#### 8.5.2 Member Capacity

$$\left(\frac{M_x^*}{\phi M_{bx}}\right)^{1.4} + \left(\frac{M_y^*}{\phi M_{sy}}\right)^{1.4} \le 1 \qquad \text{(Clause 8.4.5 of AS 4100)}$$

where $\phi M_{bx}$ = design member moment capacity for bending about the major principal x-axis for a laterally unsupported member

#### 8.5.3 Tables

Tables 8.1-1 to 8.1-12 list $\phi M_{sx}$ and $\phi M_{sy}$. The 8.1 series tables also provide references to other tables – e.g. Part 5 to evaluate $\phi M_{bx}$.