

## WEB LOCAL BENDING

At the ends of curved monorail beams, the torsional moment,  $M_z$ , must be transferred to the support.

The controlling limit state is typically local out-of-plane bending of the monorail beam web.

The effective width of web, shown in Figures 1c and 1d, can be used to calculate the web local flexural strength.

The effective width is

$$W_{eff} = N + 1.8 \frac{t_f}{t_w} \sqrt{b_f d}$$

The yield moment is calculated using the effective section modulus of the web

$$S_{eff} = \frac{W_{eff} t_w^2}{6}$$

$$M_n = F_y S_{eff}$$

$$M_{all} = \frac{M_n}{\Omega}$$

$$\Omega = 1.67$$

where

$F_y$  = specified minimum yield stress

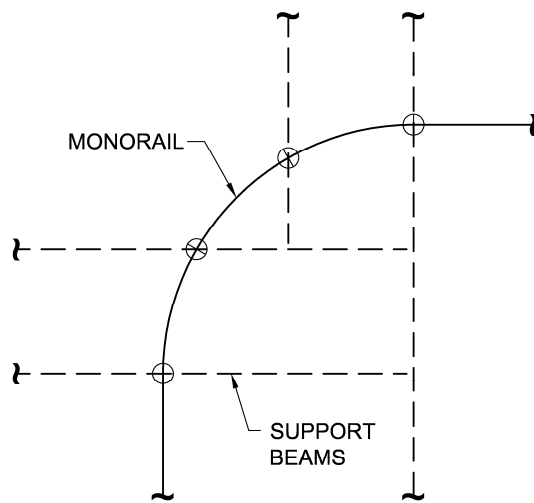
$N$  = fitting width

$b_f$  = flange width

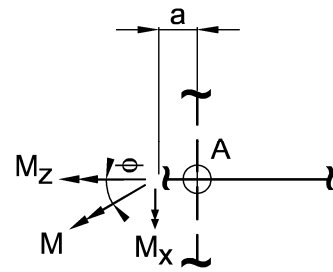
$d$  = depth of member

$t_f$  = flange thickness

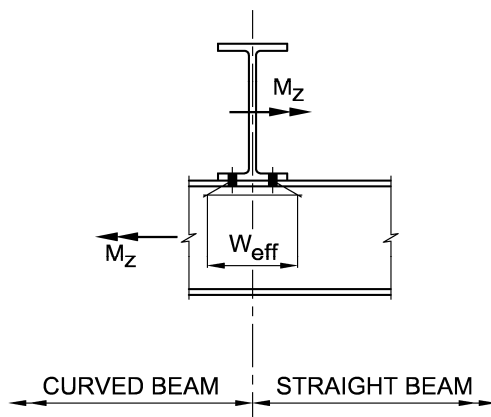
$t_w$  = web thickness



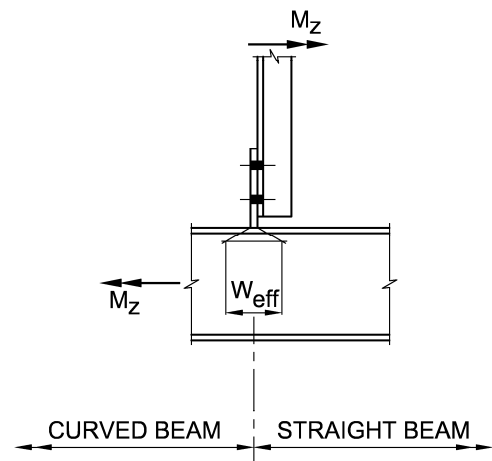
*a. curved monorail beam*



*b. support moments*



*c. beam connection*



*d. hanger connection*

*Fig. 1. Curved monorail support.*