





HEAD LOSS COEFFICIENTS

$$\frac{\text{Bends}}{\text{Bends}} \qquad \qquad \text{h}_{\text{B}} = \text{k}(\frac{\text{Vu}^2}{2\text{g}})$$

Velocity transitions

increasing 
$$h_1 = 0.2 \left( \frac{VL^2}{2g} - \frac{Vu^2}{2g} \right)$$

decreasing 
$$h_D = 0.3 \left( \frac{Vu^2}{2g} - \frac{VL^2}{2g} \right)$$

Total head loss

$$H = N_B + N_I$$

or 
$$H = h_B + h_D$$

where Vu is velocity when full before manhole

VL is velocity when full after manhole

k is head loss coefficient

ENGINEERING STANDARDS MANUAL

ISSUE 3.0 OCTOBER 1999 HEAD LOSSES IN MANHOLE

STANDARD DETAIL

SD 4.09