



HEAD LOSS COEFFICIENTS

Bends

$$h_B = k \left(\frac{Vu^2}{2g} \right)$$

Velocity transitions

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

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

Total head loss

$$H = h_B + h_I$$

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