Figure 5–23

Definition sketch for the analysis of ideal discrete particle settling.

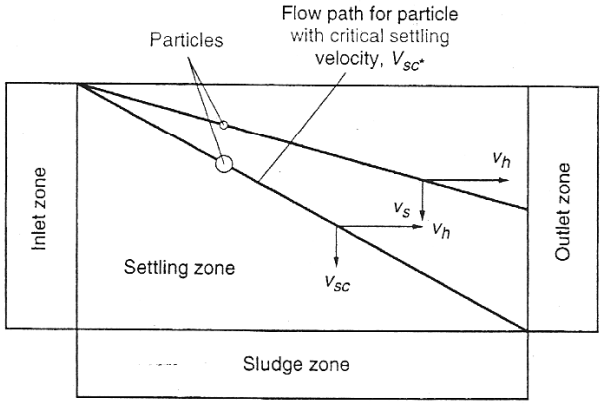
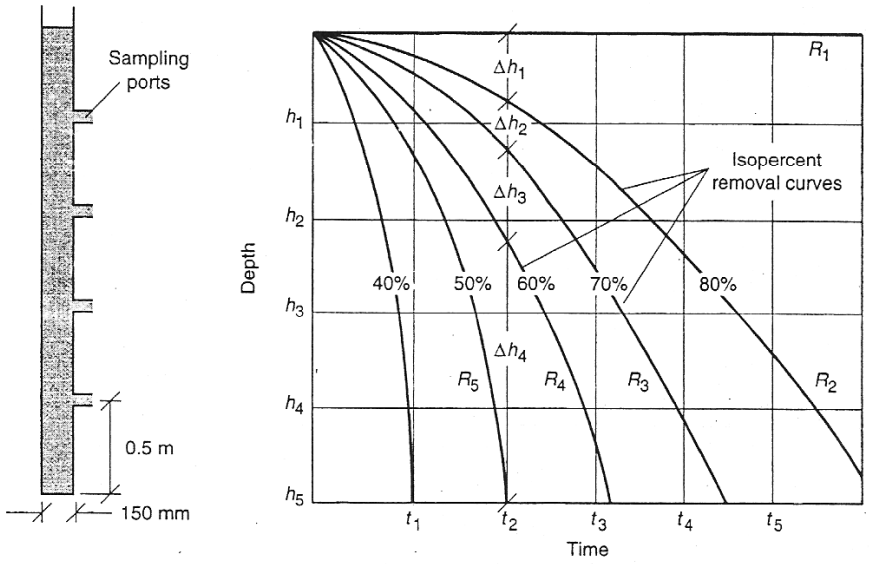


Figure 5–24

Definition sketch for the analysis of flocculent settling.



For a given clarification rate Q where

$$Q = v_c A \tag{5–28}$$

only those particles with a velocity greater than v_c will be completely removed. The remaining particles will be removed in the ratio v_p/v_c. The total fraction of particles removed for a continuous distribution is given by Eq. (5–29).

$$\text{Fraction removed} = (1 - X_c) + \int_0^{x_c} \frac{v_p}{v_c}\, dx \tag{5–29}$$

where $1 - X_c$ = fraction of particles with velocity v_p greater than v_c

$\int_0^{x_c} \frac{v_p}{v_c}\, dx$ = fraction of particles removed with v_p less than v_c