

File note: DND

Nov 3/88

- CIL - Residence Time.

$$A. \text{ Flowrate} = 0.060928 \frac{T}{PA} [P + 2.75(1-P)]$$

where  $T =$  Tons dry solids / 24 hrs  
 $P =$  % solids, fraction  
 $A =$  % availability, fraction.

Design 8000 tpd at 40% solids.

$$\text{Flowrate} = 0.060928 \times \frac{8000}{0.4 \times 1.0} [0.4 + 2.75 \times 0.6]$$

$$= 2498, \text{ say } 2500 \text{ USGPM.}$$

$$B. \text{ Working volume of one vessel}^* \begin{matrix} 2659,405 \text{ L} \\ 93,918 \text{ ft}^3 \end{matrix}$$

$$\text{Design Retention Time} = \frac{6 \times 2659,405 \text{ US Gal.} \times \frac{1 \text{ hr}}{60 \text{ min}}}{2498 \text{ USGPM.}}$$

$$= 28.3 \text{ hrs.}$$

\* Don Cooper's Calculation

Tank Size 47.5 ft x 54.5 high . Minus 1.5' freeboard

# Conversation with Sadek

Design data were  
8000 tpd  
40% solids  
2.7 ft solids.

Flowrate 2619 USGPM.

Quoted retention time was in the order of 24-26 hrs.

$$\begin{aligned} T_{\text{per Sadek}} &= \frac{6 \times 2,659,405}{3.76 \times 60 \times 2619} \\ &= 27 \text{ hrs.} \end{aligned}$$