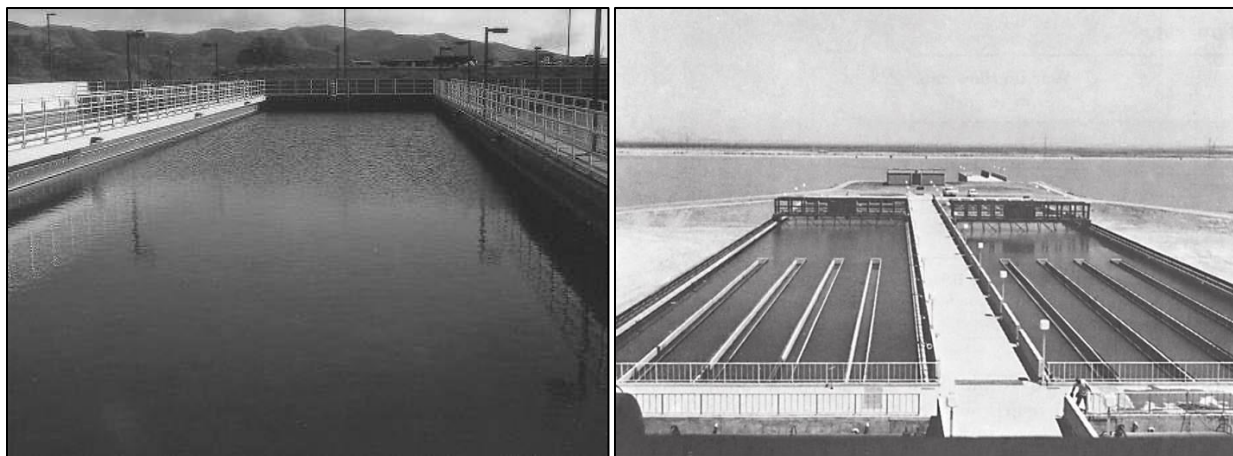Lecture 5: Settling (sedimentation) tank.

5. Settling tank

The settling tank is designed so as to remove the settled water from the tank without carrying away any of the floc particles. In ideal sedimentation process, the average velocity of the water is equal to its flow rate divided by the area through which it flows:

$$v = \frac{Q}{A_c}$$

where v = water velocity (in m $\cdot$ s^{-1}) $\equiv$ overflow rate
Q = water flow (in m$^3 \cdot$ s^{-1})
A_c = cross-sectional surface area (in m^2)

Q: The design flow rate is 3800 m^3/day and overflow rate is 20 m/day. Determine the surface area of this tank. Determine the length of the tank, using length=3xwidth. Determine the tank depth, assuming a detention time of 2 hours.