

Chapter III

MATERIALS AND METHOD

A pilot oxidation pond constructed with steel plate with a total surface area of 3500 cm^2 and over all depth 30 cm. was used for study. Figure 5 shows details of the pilot oxidation pond.

An aeration rotor is mounted and driven by a $\frac{1}{2}$ horse power electric motor. A set of wheels and belts regulated the speed at 120 r.p.m.

Rectangular rotor and shaft of rotor made of 21 steel plates with 2 X 13 cm. blade and diameter of the shaft is 2 cm. Figure 6 shows details of this rotor.

The wastes were sugar mill washed water included mill bearing water and washing from the mill floor, and boiling house pump, leakage, spillage of juice, syrup, molasses and residue from factory washout operations.

Details of the procedures in the determinations of BOD, COD, DO, S.S, and NO_3 during steady condition are as follows :

1. Adjusted pH of the sample to about 7-7.2 by adding potassium diphosphate (K_2HPO_4)
2. Determine the characteristics of the sample, BOD, COD, NO_3 by methods described in "Standard Method for Examination of Water and Waste water" (APHA, AWWA, WPCF, 1970)
3. Determination of suspended solids (SS) by method described in Sewage Works Journal (January, 1935)

The formula is,

$$k = 450 \cdot (y-1) 600$$

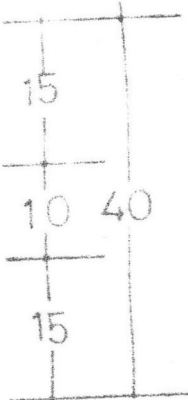
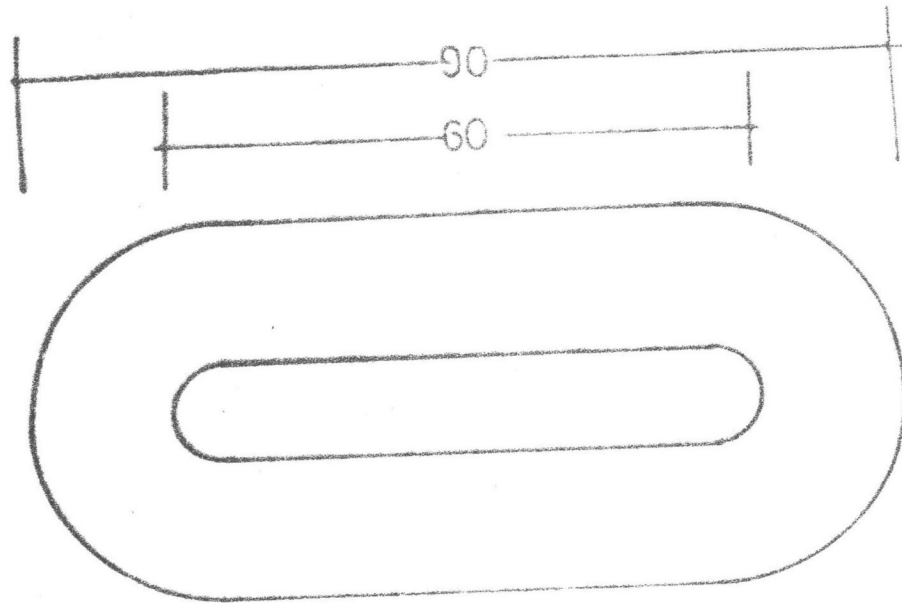
where

x = suspended solids in ppm

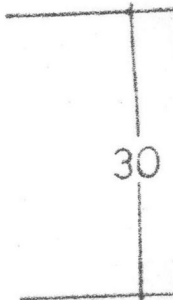
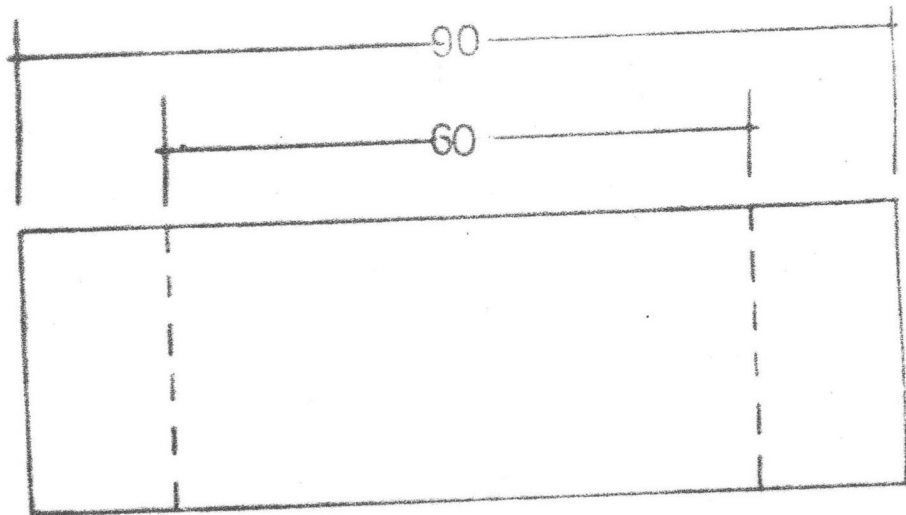
y = per cent sludge by volume in a 15 ml.
graduated centrifuged tube

The volume of centrifuged solids was obtained by centrifuging 15 ml. samples for 10 minutes at 2600 rpm. in a graduated 15 ml. centrifuged tube

4. Start the aeration rotor at 120 rpm. and feed urea as nutrient for bacteria
5. Measure residual DO in sample and control it at least 0.5 mg/L
6. Recorded the temperatures, DO, COD, BOD, and SS.
7. Determine the characteristics of the sample (BOD, COD, DO, SS) all 7 days
8. The samples used for study were about 100 litre



TOP VIEW 1:8
FIGURE 5
DETAIL FOR PILOT OXIDATION POND



SIDE VIEW 1:8

FIGURE 6
DETAIL FOR RECTANGULAR ROTOR

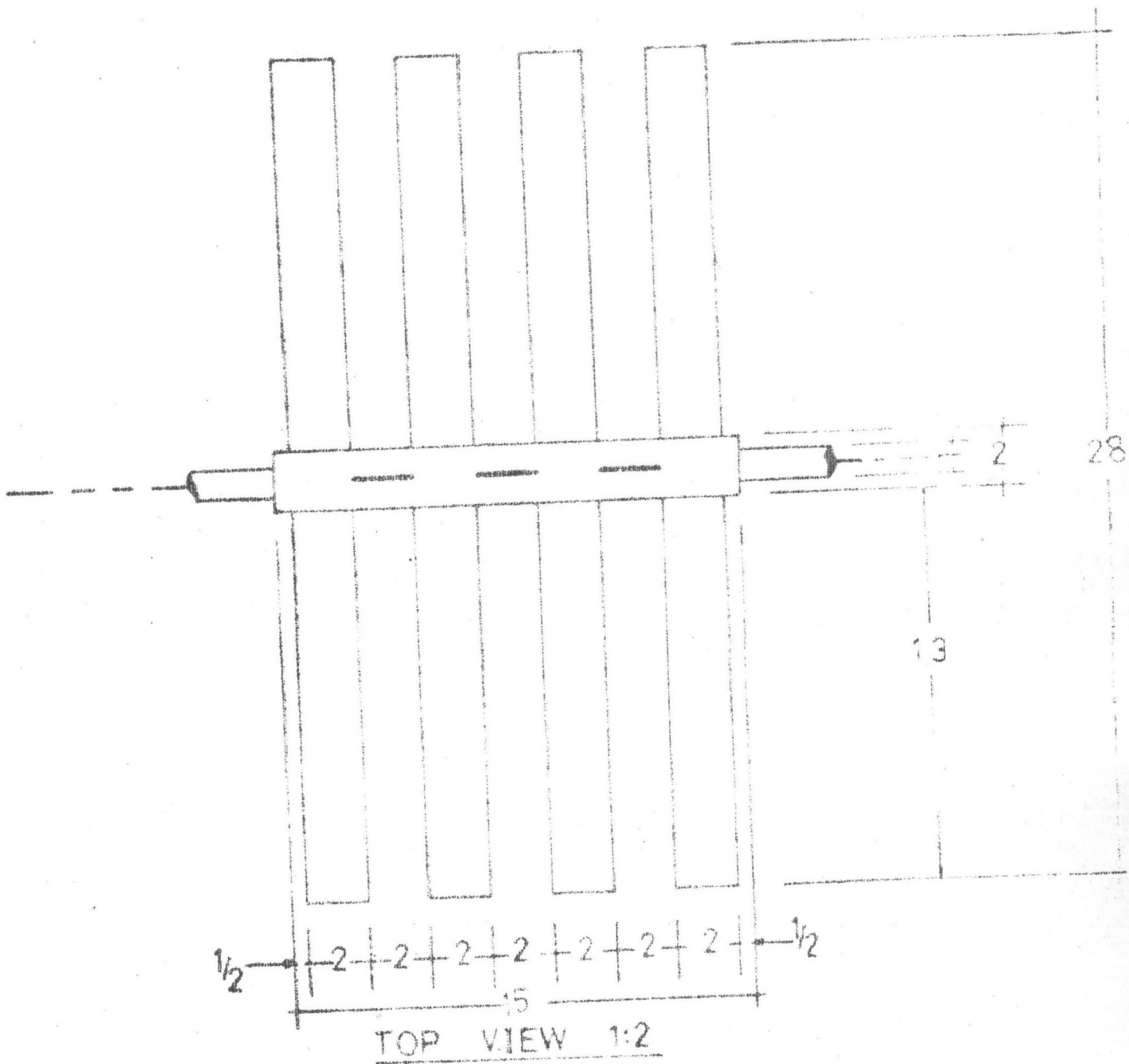
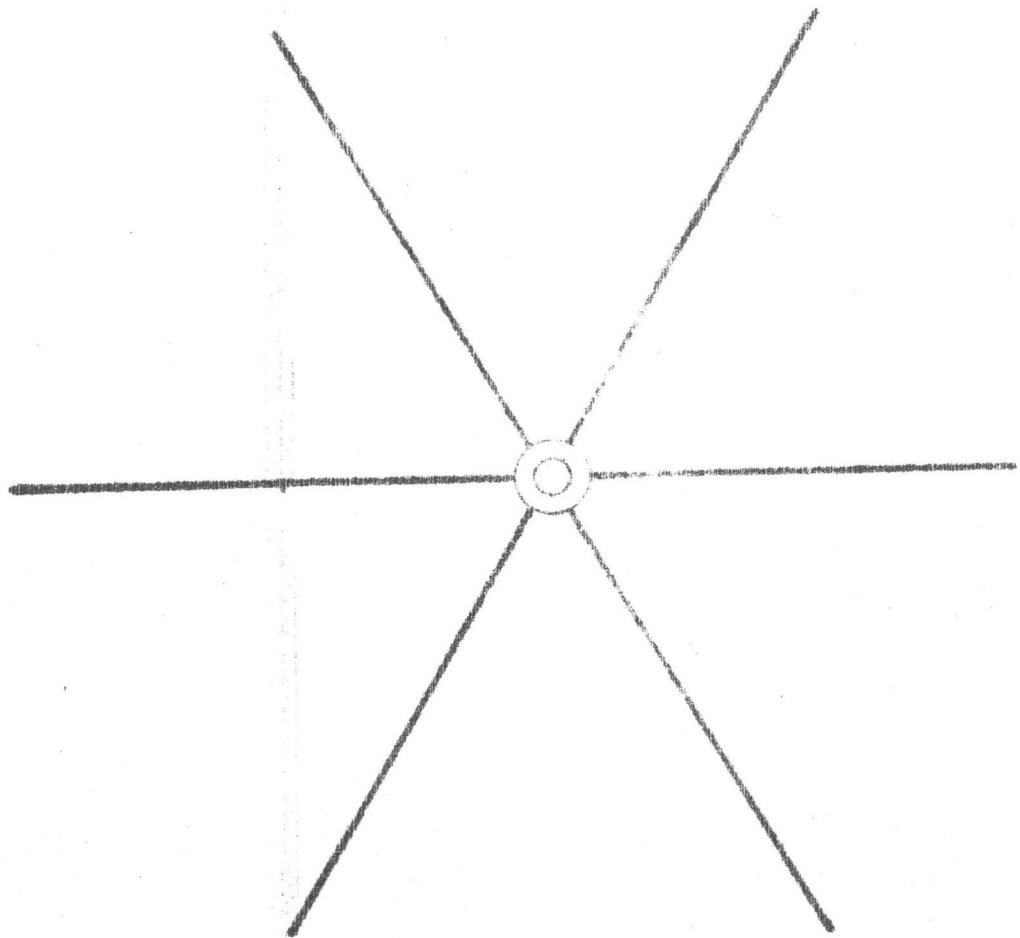


FIGURE 5-A
DETAIL FOR RECTANGULAR ROTOR



SIDE VIEW 1:2