

Distribution & Conveyance Systems

• Layout of distribution system.

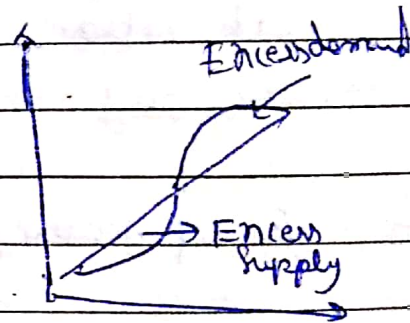
1. Dead end system
2. Grid iron system
3. Ring system
4. Radial system

Storage Capacity of distribution Reservoir.

1. Balancing Storage or equalising Storage
2. Break down Storage \rightarrow 25% of total Storage Capacity
3. fire Storage

• Determination of leakage in the underground distribution pipe.

1. By direct observations
2. By using sounding rods
3. By plotting hydraulic gradient line
4. By using remote detecting meter



$$\text{Balancing Storage} = \text{Excess demand} + \text{Excess supply}$$

Detection of leakage in the Distribution Pipe \Rightarrow

The following method may be used

- (1) Sounding rods
- (2) by direct observation
- (3) by plotting hydraulic gradient line
- (4) by using remote detecting meter

By using direct observation \Rightarrow

- observation a wet soft spot on the unpaired ground

- Such indication are available in clayey and loamy soil. however in sandy soil the leak are difficult to traced direct observation

(2) By using sounding rod \Rightarrow

A sharp pointed metal rod is thrust into the ground along the pipe line and pulled up for inspection. it may be

muddy part will Preliminary indicate the presence of leakage.

- the sound of escaping water can also be heard by placing the ear on the top of the inserted rod.
- aquaphone or samescope can also be used to magnify the sound.

(3) By plotting hydraulic gradient line \rightarrow

Pressure at various point along a suspected pipe line are measured and hydraulic gradient line is plotted.

- the appearance any kind of change in the slope of the H.G.L will indicate location of leak in pipe line.

(4) By using relate detection meter \rightarrow

these meter measure any unusually high flow passing through a relate main during the period of low water consumption such as during night or early morning, this an material or excess flow from a portion of the pipe will indicate the leakage.

1 Design of distribution systems

Following steps are followed.

(1) Survey and Map \rightarrow Position of road, lane, street, lane commercial locality etc.

(2) Tentative layout \rightarrow Showing position of treatment plant, distribution main, distribution and balancing reservoir, valve etc.

(3) Discharge in pipe line \rightarrow Based on the density of population and other requirement.

- pipe are designed for maximum hourly of maximum daily demand ($2.7 \times A \times D$)

(4) Calculation of pipe dia \rightarrow

flow velocity remain in pipe $6/10$ 0.6 to 3 m/sec

Loss of head calculated William Hazen's formula