Certificate on PIM Training Course

Module 5- Introduction to Canal System, Definitions and Units

Topic 5.1: Main components of the Canal System

Topic-5.1
Main Components of the Canal System

Topics of Module-5:

5.1 Main components of the Canal System

5.2 Canals and their discharge-based classification.

5.3 Technical vocabulary related to canal operation.

5.4 Units in Irrigation Management & conversion factors

Before learning canal irrigation management, it is better to know about the various parts of canal network. General information is provided here on the main components of the Canal System.

To provide irrigation facilities to any cultivable area, either reservoirs are made on the rivers by putting dams across the rivers storing water and carried

it for using it in agriculture fields or river water is simply diverted to carry it. The carrier system is known as canal network. This networked is termed as canal system. In India both type of canals ie reservoir fed and river diversion are in existence. This network of various sized canals & operation structures feed the farmers of a predetermined area with controlled flow in equitable manner.

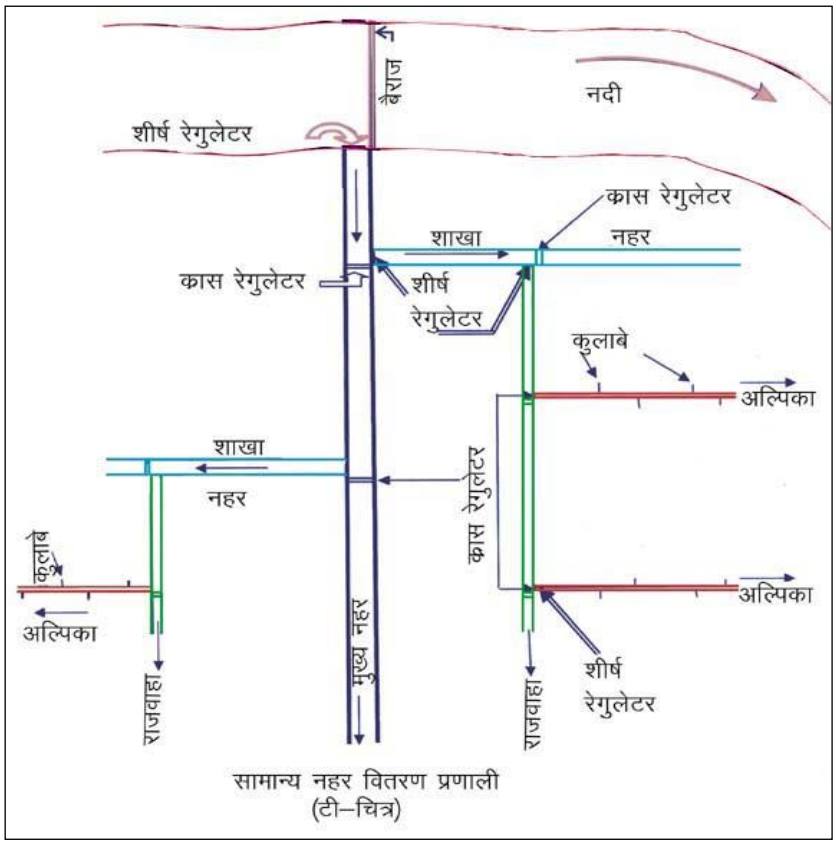
In general, the canals are open dug drain type may be lined or unlined. These canals are constructed for carrying the irrigation water from rivers /reservoirs to agriculture fields. The size of canal of off- taking from source is larger than canals off- taking from it. In a normal canal system, the canal off taking from source is termed as main canal, immediate off taking from it may be branch canal /distributary canal /or minor. These are classified according to their discharge carrying capacity.

For controlling flow and measuring discharge in the canals, gated structures are constructed at the beginning of it called head structures. To cross the canals for ease of farming operations bridge structures are constructed as per size of canal and as per requirement. Some states had fixed the norms for its construction. There may be abrasion of these rules.

A normal view of canal is shown below:

Figure- 1 A normal view of canal

Figure- 2 Layout Plan of Canal System



Picture 3: Barrage

Barrage: - Barrages are constructed across the rivers with gates in built to obstruct the river flow and to divert it in canals. For regulating canal flow, the gates are regulated up or down as per level of water in river.

Dam: - Dams are constructed to obstruct the river flow for collecting water in the back side which is known as reservoir. Canals are taken-off from these reservoirs making head regulator.

Cross and head regulators

The cross regulators are gated structured constructed just downstream of off taking canals in the parent canals. Quantum of water entering in a canal off taking from the parent canal is regulated. It is controlled with the help of gates provided for the purpose.

Head Regulator: - It is also a gated structure constructed at head of canals to regulate & monitor water entering the off taking channels.

Figure – 4: Cross & head regulators

Water Measuring Devices: - The water measuring devices are constructed in the channels to measure and monitor the water flows. Water measuring devices may be of various type right from very costly automatic instruments to very cheap & simple measuring devices. It depends upon the accuracy required, ease of observation and other considerations like safety of instrument itself and cost involved. Generally, a balance is maintained between the cost, accuracy, ease of construction and observation and safety. The flow in the channel is generally measured in Cubic feet or cubic meter per second, liter per sec.

Figure 5 : Canal Gauge

Figure 6: Water measuring Flume

Escapes: - Escapes are constructed to discharge surplus water from canal taking off from upstream a cross regulator. This structure is constructed to save the canals in case of any eventuality like cutting or bursting the canals. It eases the repair operations in above situations. The quantum of water is regulated with the help of gates provided at the head.