

Classification of Canals:

The irrigation canals can be classified in different ways based on the following considerations.

1. Classification based on the nature of source of supply:

In this method canals may be classified as

a) Permanent canals

b) Inundation canals

A permanent canal is one which draws water from a permanent source of supply. The canal in such cases is made as a regular graded canal (fixed slope). It is provided with permanent regulation and distribution works. A permanent canal may also be perennial canal or non-perennial canal depending on whether the source supplying water is a perennial one or a non-perennial.

An inundation canal is one which draws water from a river when the water level in the river is high or the river is in floods. These canals are not provided with any regulatory works, but an open cut is made in the banks of the canal to divert water.

2. Classification based on the function of the canal:

Here the canals may be classified as

- a) Feeder canals
- b) Carrier canals
- c) Navigation canals
- d) Power canals

A feeder canal is constructed for the purpose of supplying water to two or more canals only but not directly irrigating the fields.

A carrier canal carries water for irrigating the fields and also feeds other canals for their needs.

A canal serving the purpose of in-land navigation is called a navigation canal.

A power canal supplies water to a hydro electric power generation plant for generation of electrical power.

3. Classification based on the discharge and its relative importance in a given network of canals:

On this basis an irrigation canal system consists of

- a) Main canal
- b) Branch canal
- c) Major distributory
- d) Minor distributory
- e) Water course or Field channel

A main canal is the principal canal in a network of irrigation canals. It directly takes off from a river, reservoir or a feeder canal. It has large capacity and supplies water to branch canals and even to major distributaries.

Branch canals take off from a main canal on either side at regular intervals. They carry a discharge of

about 5 cumec and are not usually used to directly irrigate the fields.

A major distributory takes off a branch canal or a main canal. It has a discharge capacity of 0.25 to 5 cumec. They are used for direct irrigation and also to feed minor distributaries.

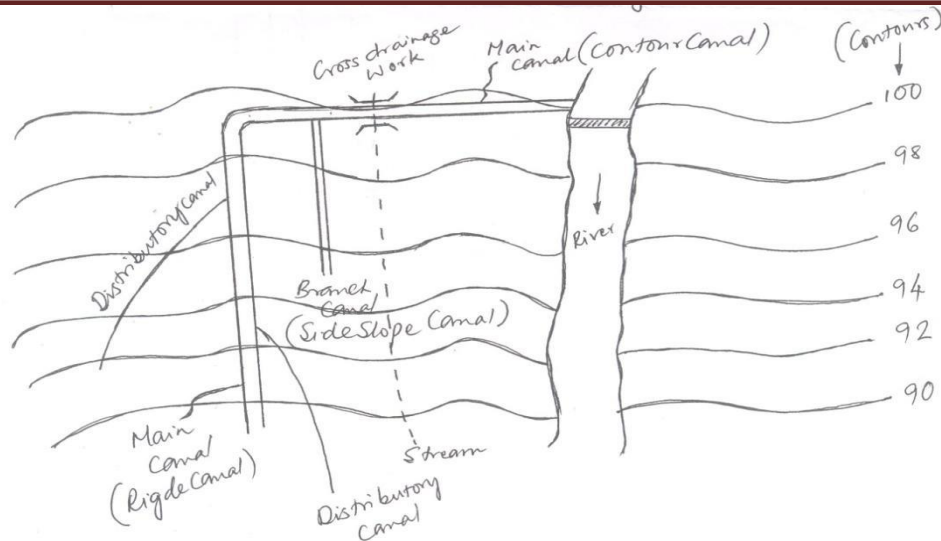
Minor distributaries are canals taking off from the branch canals and major distributaries. They carry a discharge less than 0.25 cumec. These canals supply water to field channels.

A water course or field channel takes off from either a major or minor distributory or a branch canal also. These are constructed and maintained by the cultivators/farmers. The other canals are constructed and maintained by the government or the Command Area Development Authority

4. **Classification based on Canal alignment:**

On the basis of canal alignment, the canals are classified as

- a) Ridge canal or watershed canal
- b) Contour canal
- c) Side slope canal



A Ridge canal or watershed canal is one which runs along the ridge or watershed line. It can irrigate the fields on both sides. In case of ridge canals the necessity of cross drainage works does not arise as the canal is not intercepted by natural streams or drains.

A contour canal is one which is aligned nearly parallel to the contours of the country/area. These canals can irrigate the lands on only one side. The ground level on one side is higher and hence bank on the higher side may not be necessary. A contour canal may be intercepted by natural streams/drains and hence cross drainage works may be essential.

A Side slope canal is one which is aligned at right angles to the contour of the country/area. It is a canal running between a ridge and a valley. This canal is not intercepted by streams and hence no cross drainage works may be essential. This canal has steep bed slope since the ground has steep slope in a direction perpendicular to the contours of the country/area.

5. Classification based on the financial output:

On the basis of the financial output /revenue from the canals, the canals are called as

- a) Productive canals
- b) Protective canals

A productive canal is one which is fully developed and earns enough revenue for its running and maintenance and also recovers the cost of its initial investment. It is essential the cost of its initial investment is recovered within 16 years of construction.

Protective canals are those constructed at times of famine to provide relief and employment to the people of the area. The revenue from such a canal may not be sufficient for its maintenance. The investment may also not be recovered within the stipulated time.

6. Classification based on the soil through which they are constructed:

On the above basis the canals are classified as

- a) Alluvial canals
- b) Non-alluvial canals.

Canals constructed in alluvial soils are known as alluvial canals. Alluvial soils are found in the Indo-Gangetic plains of North India. The alluvial soils can be easily scoured and deposited by water.

Canals constructed through hard soils or disintegrated rocks are called non-alluvial canals. Such soils are usually found in Central and South India.

7. Classification based on Lining being provided or not:

On the above basis the canals are classified as

- a) Unlined canals
- b) Lined canals

An unlined canal is one which the bed and banks of the canal are made up of natural soil through which it is constructed. A protective lining of impervious material is not provided. The velocity of flow is kept low such that bed and banks are not scoured.

A lined canal is one which is provide with a lining of impervious material on its banks and beds, to prevent the seepage of water and also scouring of banks and bed. Higher velocity for water can be permitted in lined canals and hence cross sectional area can be reduced.