

Hydraulic structures

KHUSHHAL

Asst Prof.

Civil engineering
Department

RPS CET, BALANA

Contents

- Introduction to canal regulation work
- Types of regulation work such as falls and its types, cross regulator and distributory head regulator, outlets and canal escape.

Regulation work

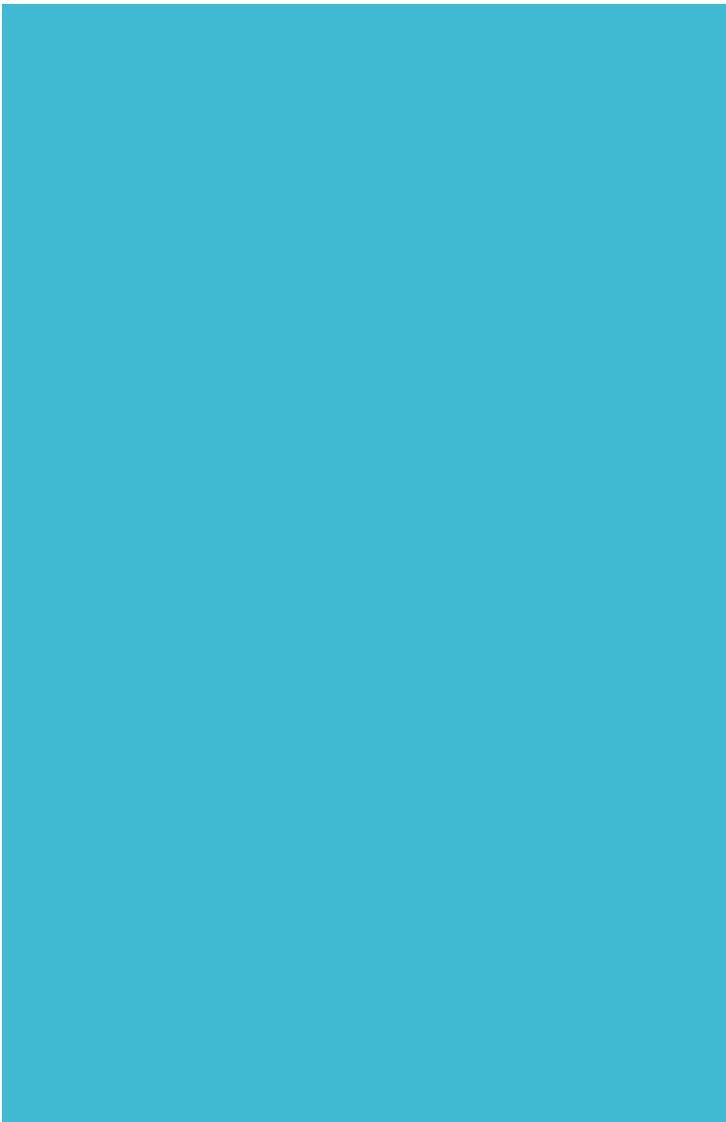
- It is defined as the structure constructed to regulate the discharge and velocity of flow in a channel is known as regulation work.

Various regulation works are:-

- Falls or drop
- Distributory head regulator
- Cross regulator
- Canal escape
- Canal outlet

Falls

- It is defined as a structure constructed across a channel to lower down its water level.
- It helps to destroy the surplus energy of falling water, otherwise it may cause scouring of bed and banks of channel.

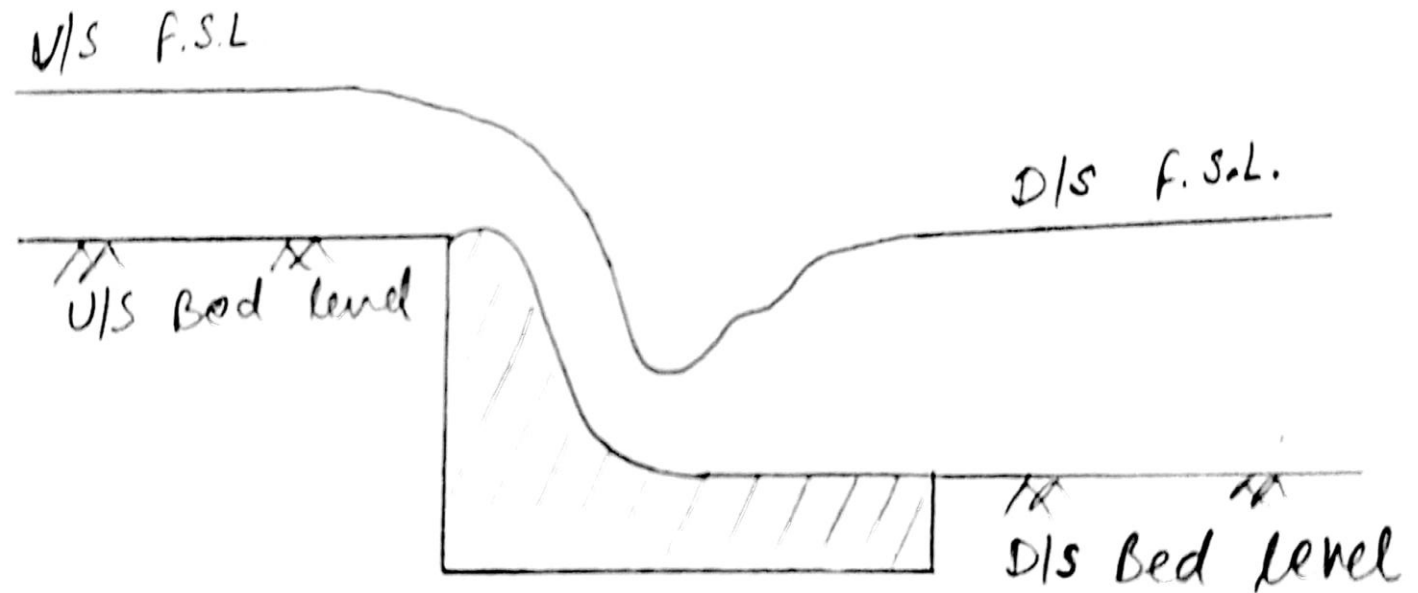


Types of falls:-

1. Ogee fall
2. Stepped fall
3. Rapid fall
4. Vertical drop fall
5. Meter or Non-Meter fall

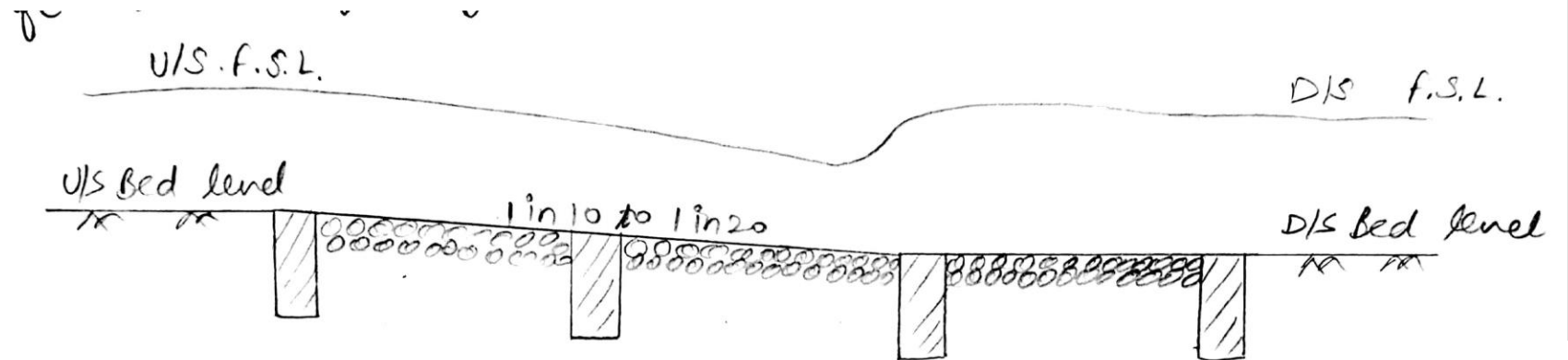
Ogee fall

- This type of fall was constructed by Sir proby cautley on Ganga river.
- This type of fall is provided with convex and concave curve to provide smooth transition from u/s to d/s.



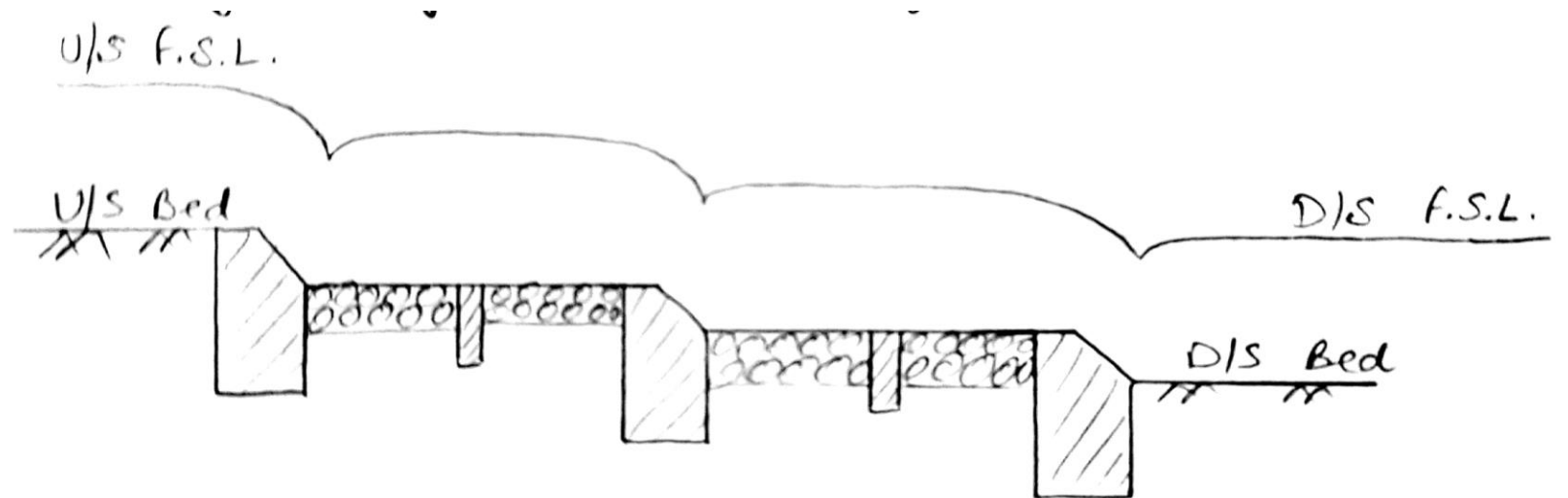
Rapid fall

- This type of fall was designed by R.F. Crofton on Western Yamulna canal.
- It consist of a glacis having gentle slope of 1 in 10 to 1 in 20.
- These were very expensive.



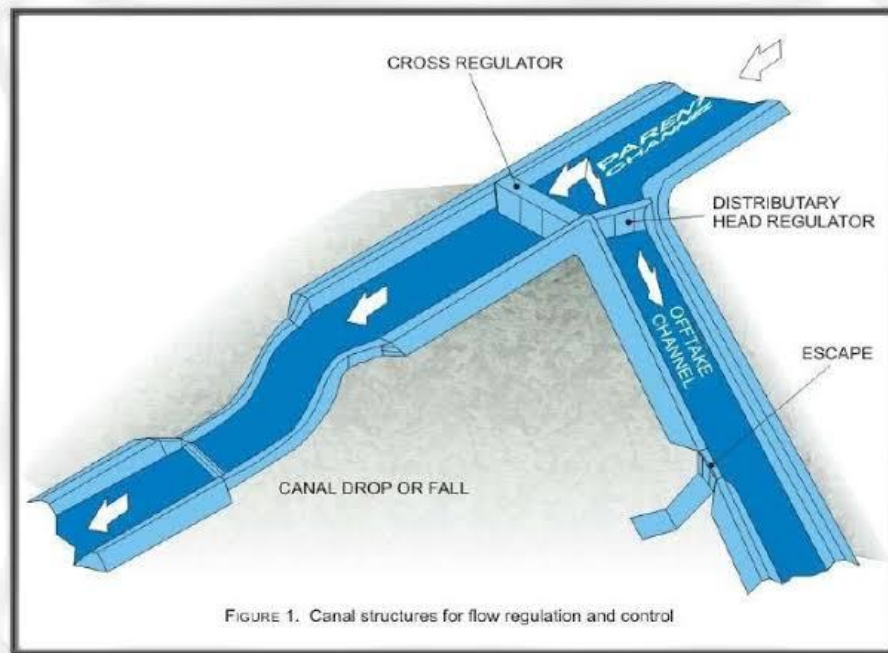
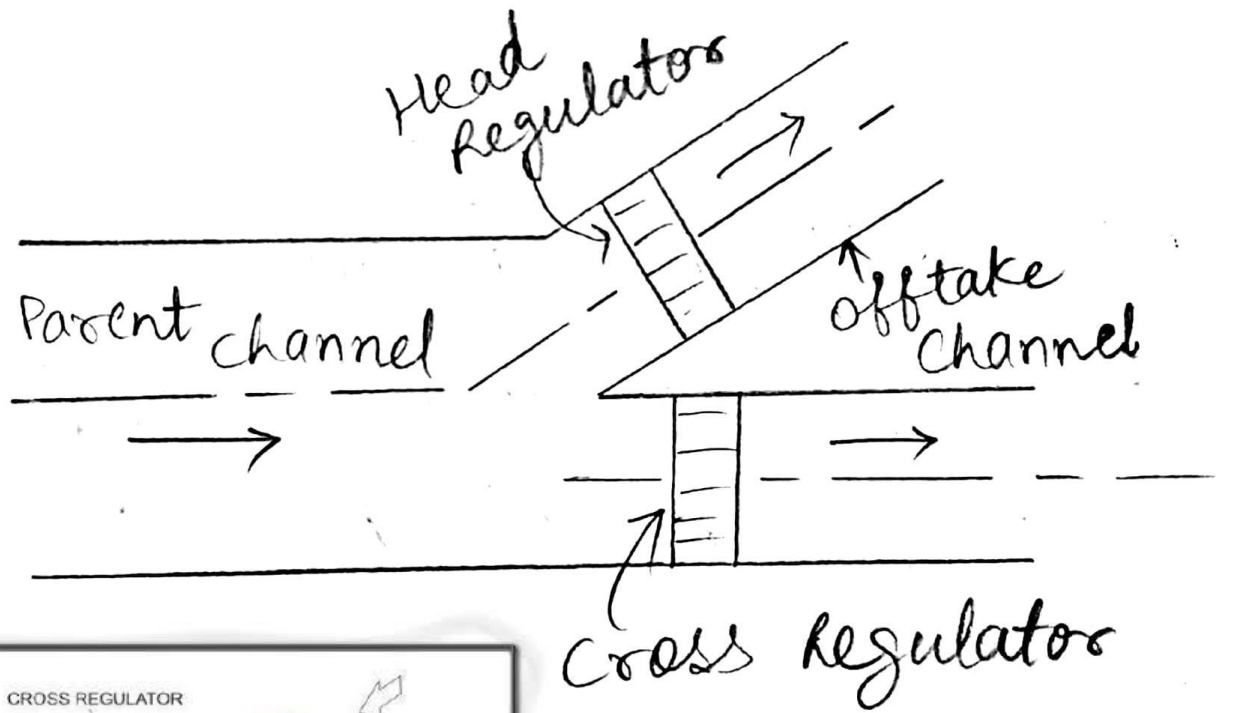
Stepped fall

- This type of fall was modified form of rapid fall.
- In this, the long glaucis of rapid fall were replaced by floors in steps.



Cross Regulator

- It is a regulation work provided in main canal or parent channel at the d/s of offtake canal to create a head of water to feed the offtake canal.
- Functions of cross regulator:-
 1. It controls the supply of water in parent channel.
 2. They provide communication facility over them by constructing a road.
 3. It helps to raise the water level in parent canal

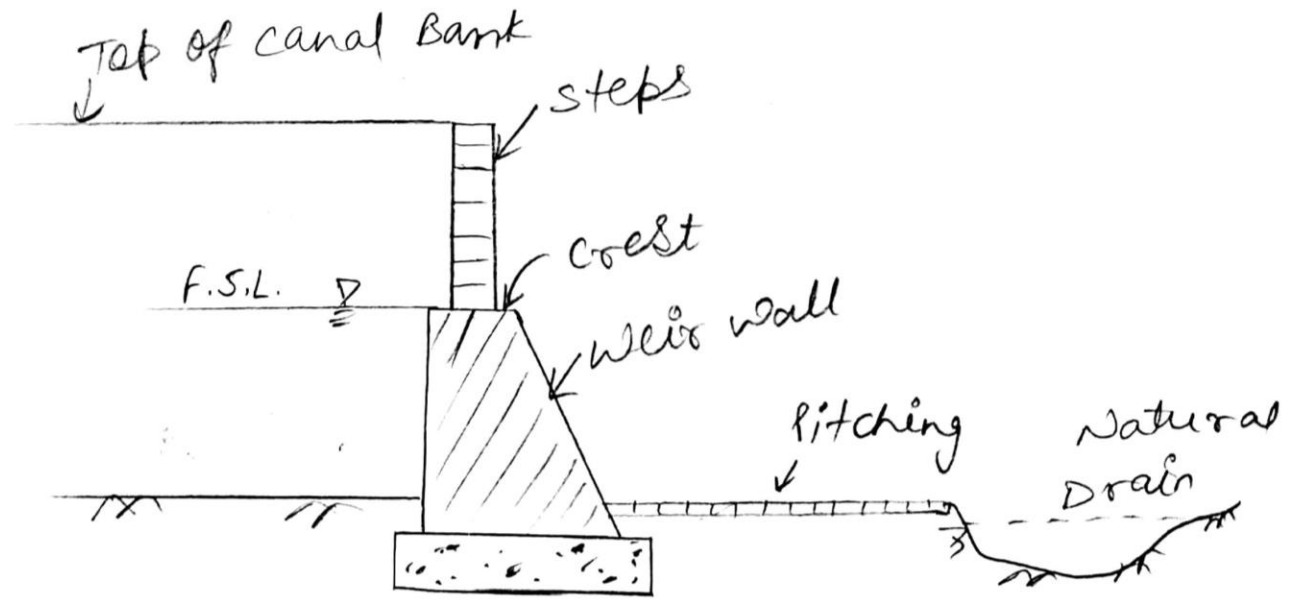
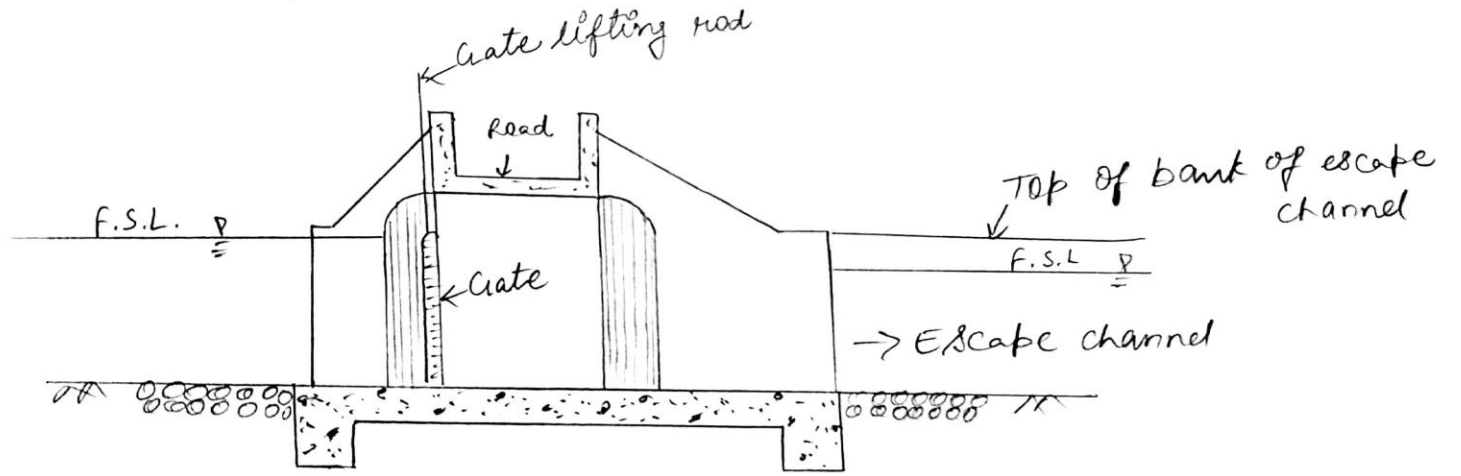


Head Regulator

- It is also known as distributory head regulator.
- It is constructed at the head of a distributory or offtake canal.
- Its functions are:-
 1. It regulates the supply of water in offtake canal.
 2. It controls the entry of silt in offtaking canal.
 3. They serve as a meter for measurement of discharge entering the offtaking channel.

Canal Escape

- It is defined as a channel constructed to remove surplus water from an irrigation channel into a natural drain.
- If surplus water is not escaped from channel it may overflow the bank.
- It may be regulator type or weir type.
- Types of escape:-
 1. Surplus water escape or canal surplus escape
 2. Canal scouring escape



Surplus water escape

- It is provided to remove surplus water from a channel.
- The channel escaping water from an escape to drain is called escape channel.

Canal scouring escape

- This is a regulator type of escape provided in the banks of channel at the head reaches of main canal to scour out silt deposited in channel.

Outlet

- An outlet is a hydraulic structure conveying irrigation water from distributary to a field.

