

Canal Headwork - Types & Locations

Definition:

Any hydraulic structure which supplies water to the off taking canal. Diversion head-work provides an obstruction across a river, so that the water level is raised and water is diverted to the channel at required level. The increase water level helps the flow of water by gravity and results in increasing the commanded area and reducing the water fluctuations in the river.

Diversion head-work may serve as silt regulator into the channel. Due to the obstruction, the velocity of the river decreases and silt settles at the bed. Clear water with permissible percentage of silt is allowed to flow through the regulator into the channel.

To prevent the direct transfer of flood water into the channel.

Functions of a Headwork

A headwork serves the following purposes

- A headwork raises the water level in the river
- It regulates the intake of water into the canal
- It also controls the entry of silt into the canal
- A headwork can also store water for small periods of time.
- Reduces fluctuations in the level of supply in river

Types of Headworks

1. Storage headwork
2. Diversion headwork

Component parts of Diversion Headwork

Types of Diversion head works

1. **Temporary:**
2. **Spurs Bunds**
3. **Permanent**

Components

1. Weir or Barrage
2. Divide Wall
3. Fish Ladder
4. Approach Canal
5. Silt prevention device
6. Canal head regulator
7. River training works

Location of Headworks

1. Rocky Stage
2. Sub mountainous or boulder stage: boulder or gravel
3. Alluvial plan

Rocky stage:

River steep slope, high velocity

Advantages:

1. Good foundation at shallow depth
2. Comparatively silt free water for turbines
3. High head for hydro-electric work

Disadvantages:

1. Long ---- length of canal. In reach soil is good for agriculture.
2. More cross damage works
3. More falls (ground steep gradient - lined to permit high velocity)
4. Costly head regulator excluding shingle
5. Frequent repairs of the weirs.

Sub mountainous or boulder stage: boulder or gravel

Advantages:

1. Less training works
2. Suitable soil for irrigation available
3. Availability of construction material locally.
4. Falls can be utilized for power generation

Disadvantages:

1. It has a strong sub-soil flow as a result
2. Reduce in storage and damage floor downstream
3. More percolation loss from canal
4. More x-drainage works
5. Less demand of water at head reaches (more idle length of canal)

Alluvial plan:

1. x- section of river alluvial sand silt
2. Bed slope small, velocity gentle
3. No idle length of canal
4. less x- drainage works
5. Comparatively less sub soil flow

Disadvantages:

1. Cost of headwork is more due to poor foundation
2. More river training works
3. Problem of silt in canal

Source:

<http://www.aboutcivil.org/headworks-types-&-locations.html>