



Bengal College of Engineering **And Technology**

Department of Civil Engineering:-

Welcome to my presentation:-

-: DAMS AND IT'S TYPES, USES AND **NECESSITY OF DAM :-**



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SUBJECT-HYDRAULIC
STRUCTURE

Introduction.

WHAT IS DAM?

A dam is a barrier constructed across a river or a natural stream to create a reservoir for impounding water or to facilitate diversion of water from the river.

At back side of this barrier water gets collected, forming a pool of water, the side on which water gets collected is called as upstream side and the other side of barrier is called as downstream side. The lake of water which is collected on upstream side of dam is called as a reservoir.

Dam is a very large structure, generally length is about half kilometer constructed across the river to storage a water for many purposes like, irrigation, industrial supply, hydropower, recreation etc.



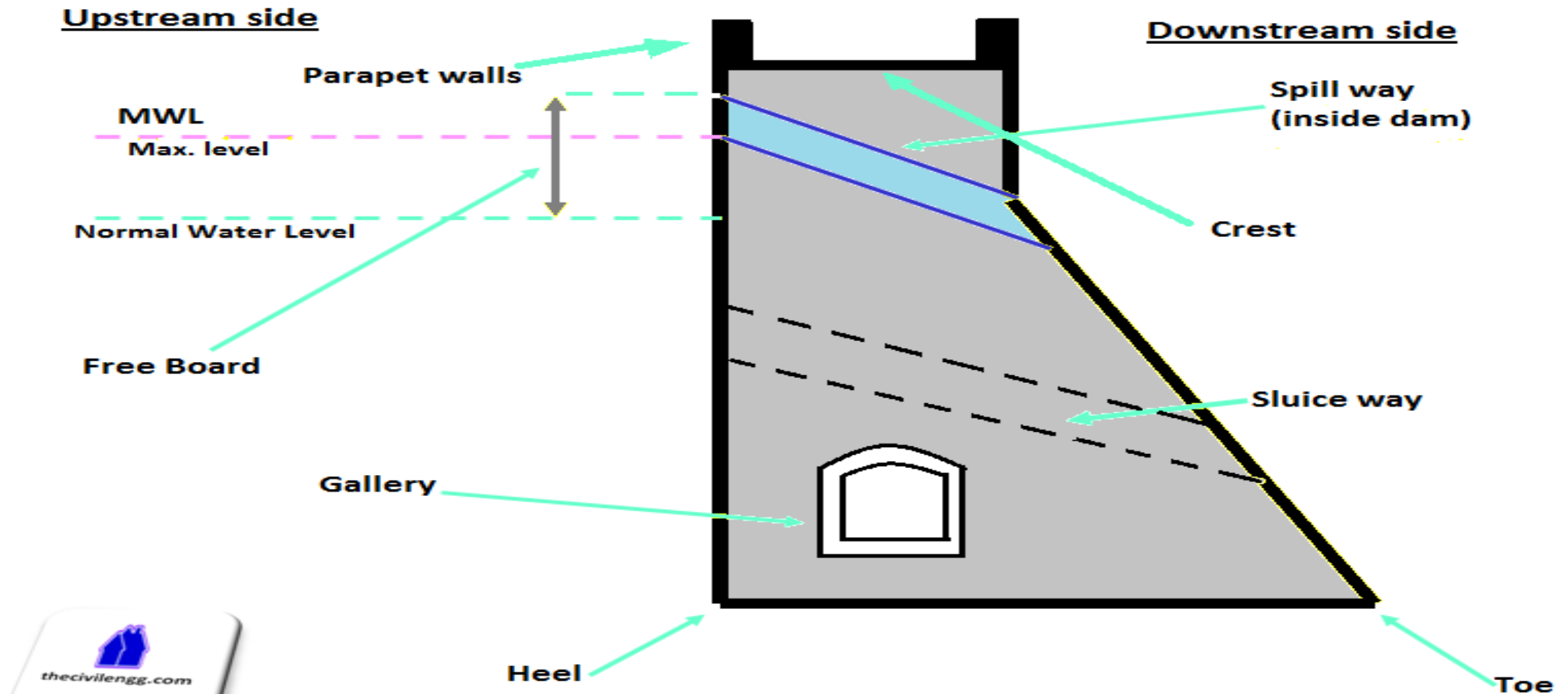
Generally, the dam should be constructed of 'V' shape thus to achieve economy in its construction.

The tallest dam in the world is '**NUREK DAM**' in Tajikistan has 300m high and the '**BHAKRA DAM**' is the highest in Asia and second highest in the world. The BHAKRA dam is constructed across river SULTEJ in Himachal Pradesh and has 246m high, the construction of this dam was started in the year 1948 and was completed in 1963.

RAW MATERIALS :

Dams may be constructed of raw materials like, masonry, timber, steel, gravel, clay, sand and silt etc.

Structure of Dam.



Types of Dam.

The type of dam depends upon the condition of dam site, the main Type of dam are as follows :-

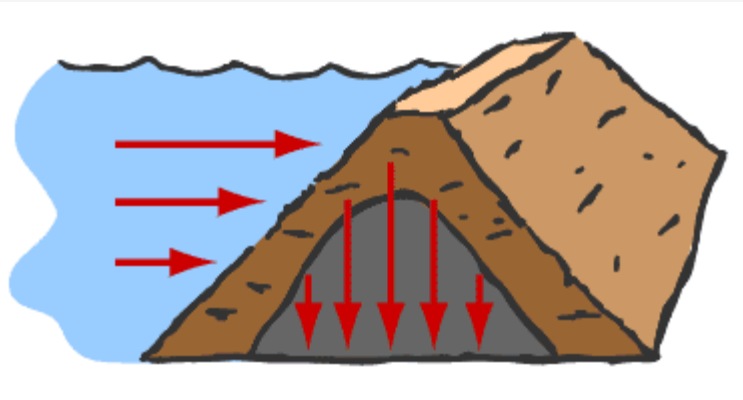
1. Earthen dam
2. Gravity dam
3. Arch dam
4. Buttress dam

1. Earthen Dam.

The dams which are constructed of earthen materials such as gravel sand, silt and clay are called as ' **Earthen Dam**'.

They are 'trapezoidal' in shape. Earthen dams are relatively smaller in height and broad at the base.

Earthen dams are constructed where the foundation or the underlaying materials or rocks are weak to support the masonry dam or where the suitable competent rock are at greater depth.



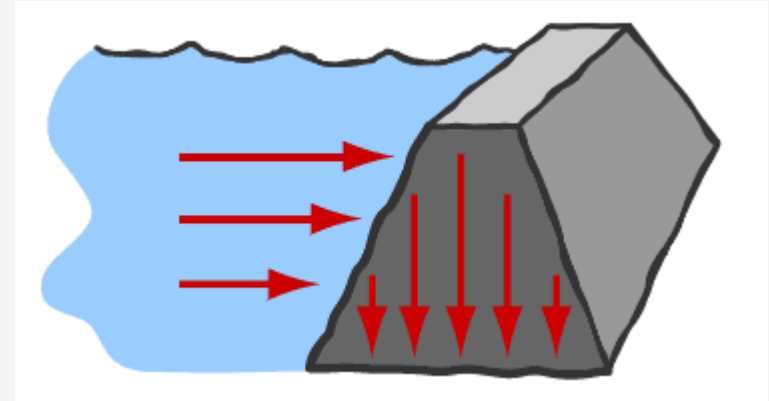
2. Gravity Dam.

Gravity dam is a solid structure made up of masonry or concrete and are constructed across the river to resist the forces exerted upon it by it's own weight.

These dams are heavy and massive wall like structures of concrete in which the whole weight act vertically downwards.

As the entire load is transmitted on the small area of foundation, such dams are constructed where rocks are competent and stable.

Example :- '**BHAKRA DAM**' is the highest concrete gravity dam.

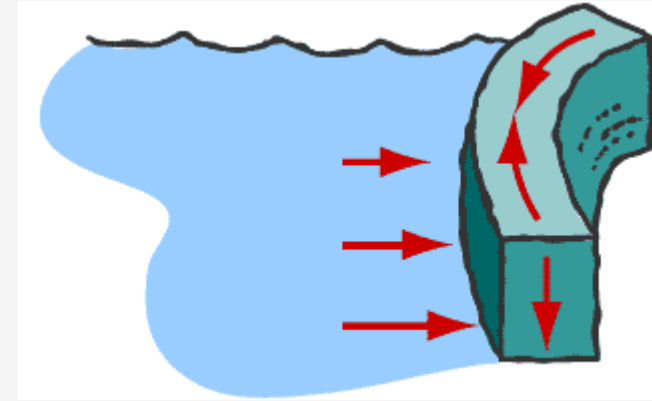


3. Arch Dam.

These types of dams are constructed of concrete or masonry dams which are curved or convex upstream in plan.

This shape helps to transmit the major part of the water load to the abutment.

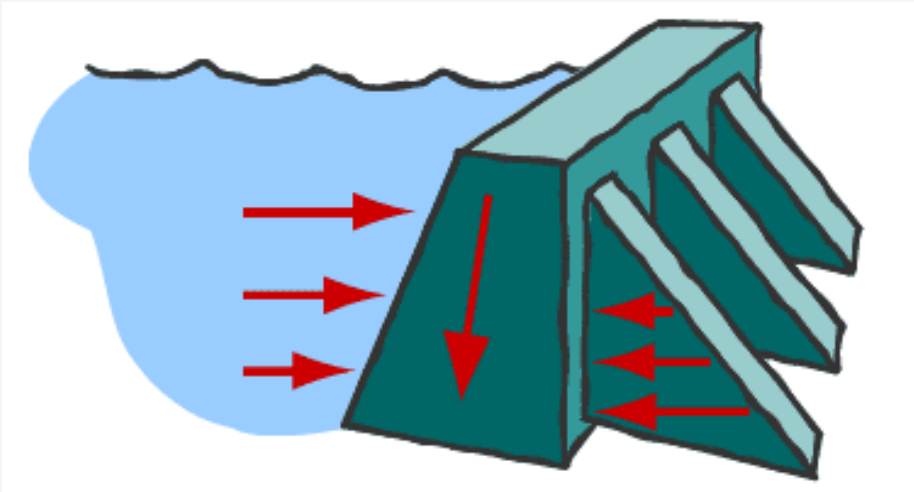
Arch dams are built across narrow, deep river gorges, but now in recent years they have been considered even for little wider valleys.



4. Buttress Dam.

"Buttress" means a support that transmits a force from a roof or wall to another supporting structure.

Buttress dam is a gravity dam reinforced by structural supports. This type of structure can be considered even if the foundation rocks are little weaker.



Uses of Dams.

1. Irrigation

The primary and main purpose of constructing a dam is to store water and use it for irrigation. The World Commission of Dam estimates around 30-40% of irrigated land relies on dams. It is estimated that 60% of the food production that comes to the market is dependent on dam water for their irrigation.

2. Hydropower Generation

Hydropower is considered the largest renewable energy source of electricity and clean because it does not contribute to global warming, air pollution, acid rain, or ozone depletion.

3. Flood Prevention

Flood control is a significant purpose for many of the existing dams and continues as the main purpose for some of the major dams of the world currently under construction. The dams are used to effectively regulate the level of water flowing in the river by temporarily storing the flood volume and releasing it later.

4. Water Supply

Dams play an important role in the water supply for domestic and industrial use. Dams store the water and supply it during the shortage of times.

5. Inland Navigation

Dams just not only serve as an irrigational lifeline, but also provide inland navigation throughout the heartland of the nation. The advantages of inland navigation, however, when compared with highway and rail are the large load-carrying capacity of each barge, the ability to handle cargo with large-dimensions and fuel savings.

6. Recreation

Dams provide prime recreational facilities such as boating, skiing, camping, picnic areas, and boat launch facilities are all supported by dams. The large water stored due to the construction of dams facilitates the growth of flora and fauna in the region due to which many recreational activities such as natural history, bird watching, landscape painting, walking, and hiking are on the rise.

7. Mine Tailing

A mine tailing dam is usually constructed by earth-filled embankment for the purpose of storing byproducts of mining operations. Tailings can be liquid, solid, or a slurry of fine particles, and are usually highly toxic and potentially radioactive.

**Thank
You**