



# **SNS COLLEGE OF TECHNOLOGY**

**AN AUTONOMOUS INSTITUTION**

**Approved by AICTE New Delhi & Affiliated to Anna University Chennai**

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COIMBATORE**

## **Department of civil engineering**

**19CET305-IRRIGATION AND WATER RESOURCE ENGINEERING**

**III YEAR / VI SEMESTER**

### **Unit 2 : CANAL IRRIGATION**

#### **Canal alignments**



# Canal alignments





# Canal alignments



## Definition:

Alignment of a canal connotes its layout in plan. It is by virtue of the alignment of a canal that the extent of its command area is determined - say, area that can be irrigated by gravity flow

## Canal alignments



It is clear that **irrigation water**, in flow type, **should reach the command area** **by gravity**.

- To accomplish this requirement **irrigation canal** is always **aligned** in such a way that **the water gets proper command over the whole irrigable area**.
- The **watershed or the ridge** is a **dividing line between two drainage areas**.
- Thus a **canal** which runs over the ridge gets **command of area on both sides of the ridge**.

Irrigation canals can be aligned in any of the three ways



1. **Watershed canal**

2. **As contour canal; and**

3. **As side slope canal**

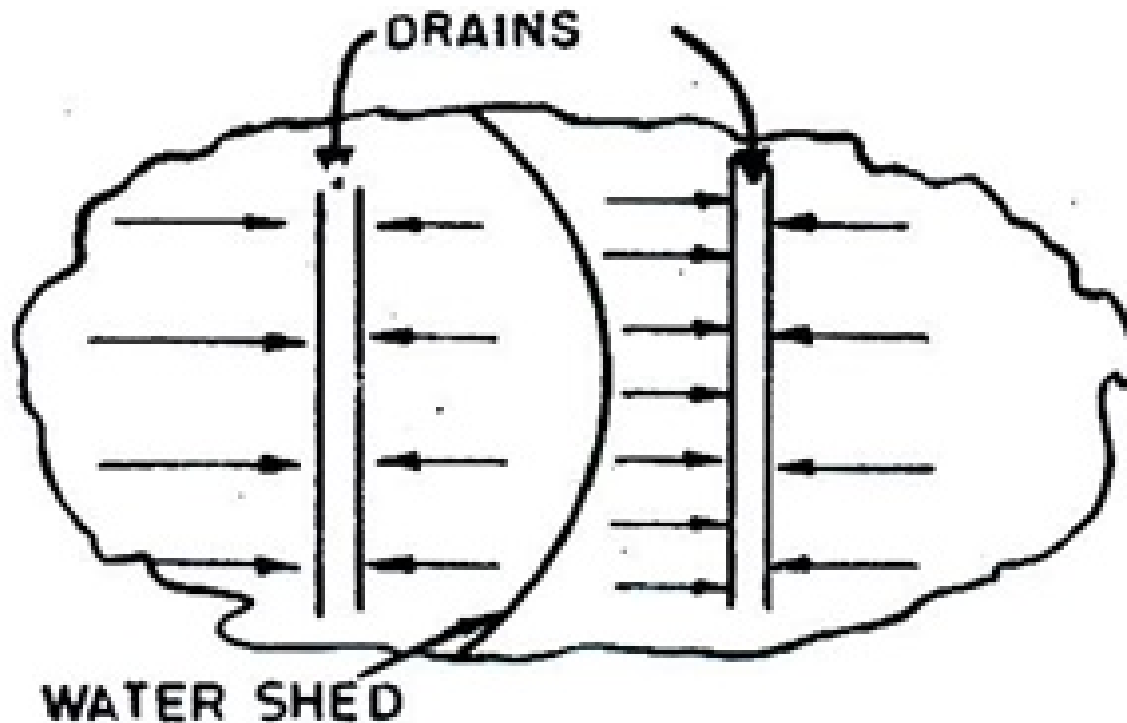
## **Watershed Canal**

- The **dividing line between the catchment area of two drains** (streams) is called the watershed.
- Thus, between two major stream, there is the main watershed which **divides the drainage areas of the two.**



larly, **between any tributary and the main stream**, &  
**ween any two tributaries** there, are subsidiary water

dividing the drainage **between the two streams on either side.**



## (ii) Contour Canal:

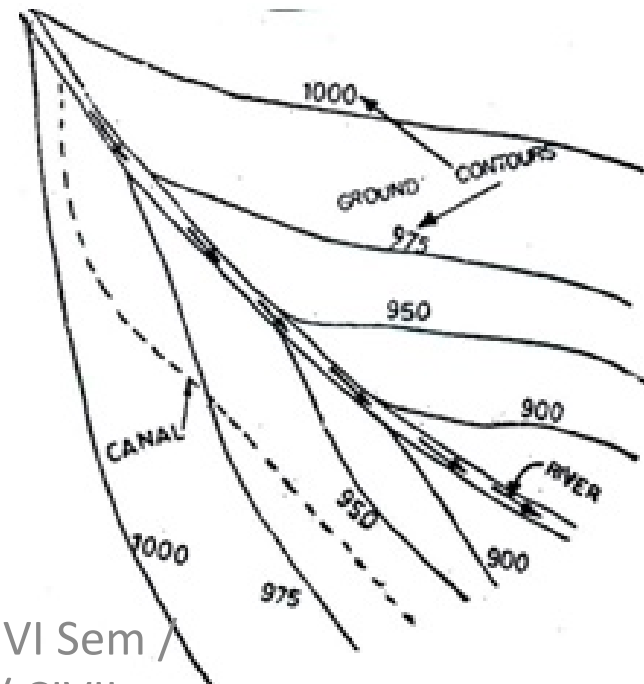


above arrangement of providing the canals also



watershed is **not possible in hill areas.**

- In the hills, the river flows in the valley, while the watershed or the **ridge line may be hundred of metres above it.**
- The channel, in such cases, is **generate sufficient flow velocities,** are given to it.

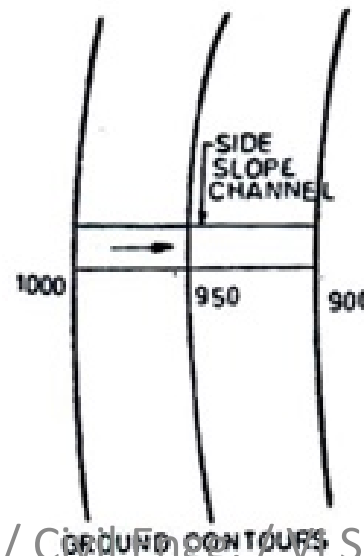


### iii) Side Slope Canal:



Side slope channel is that which is **aligned at right angles to contours, i.e. along the side slopes**, as shown in figure.

- Such a channel is **parallel to the natural drainage** flow and hence, **does not intercept cross drainage**, and hence no cross drainage works are required.







## Conditions in Canal Alignment:



Canal should be **aligned on the ridge** or in such a way as

**obtain maximum command.**

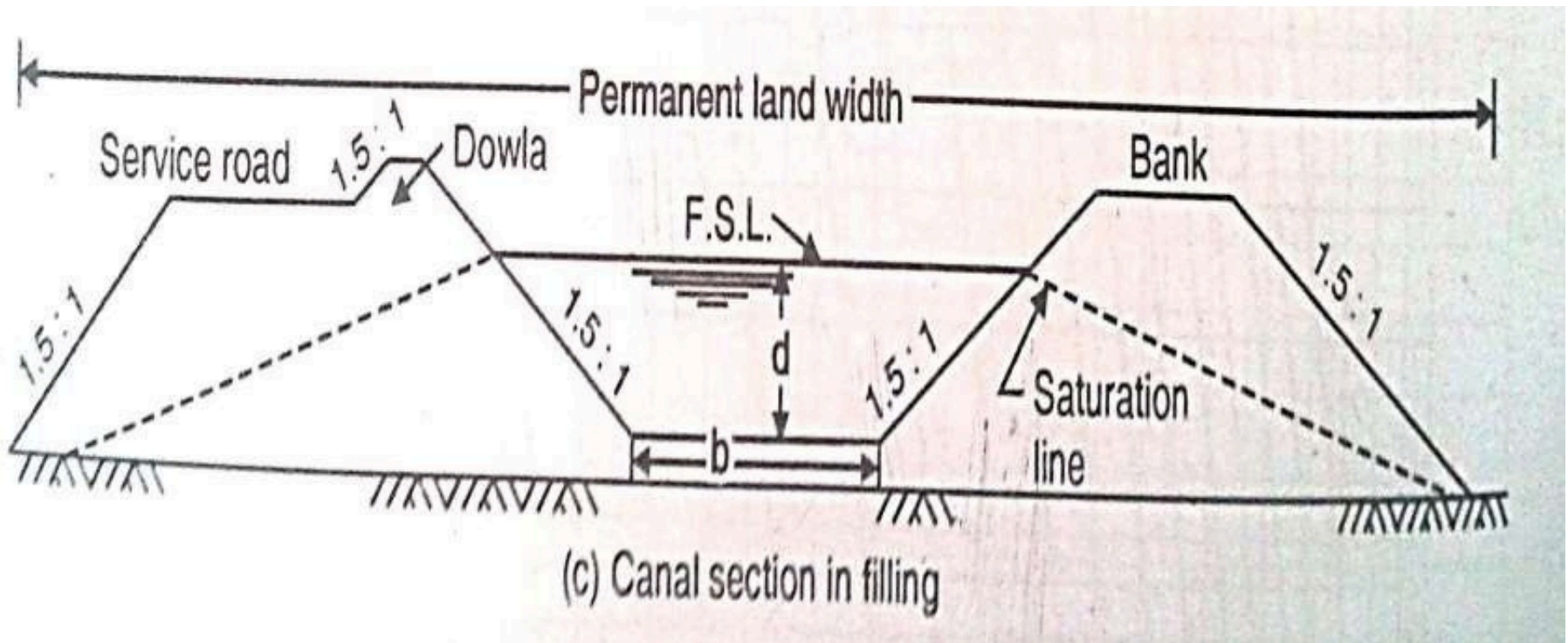
ii. So far as possible the canal alignment **should be kept in the centre of the commanded area.** (The command area is the area around the dam/ project, where the area gets benefits from the dam, such as irrigation water, electricity, etc)

iii. The canal should be aligned in such a way that **the length is minimum possible.**

iv. The alignment should **avoid inhabited places, roads, railways, properties, places of worship** etc.



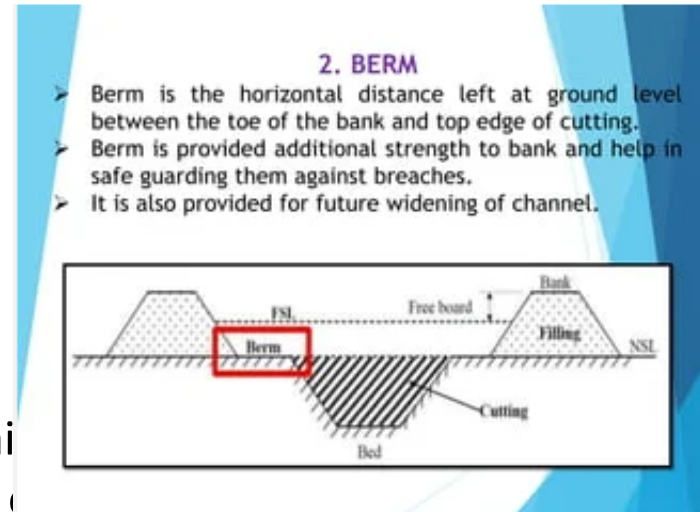
# Cross-section of canal:-





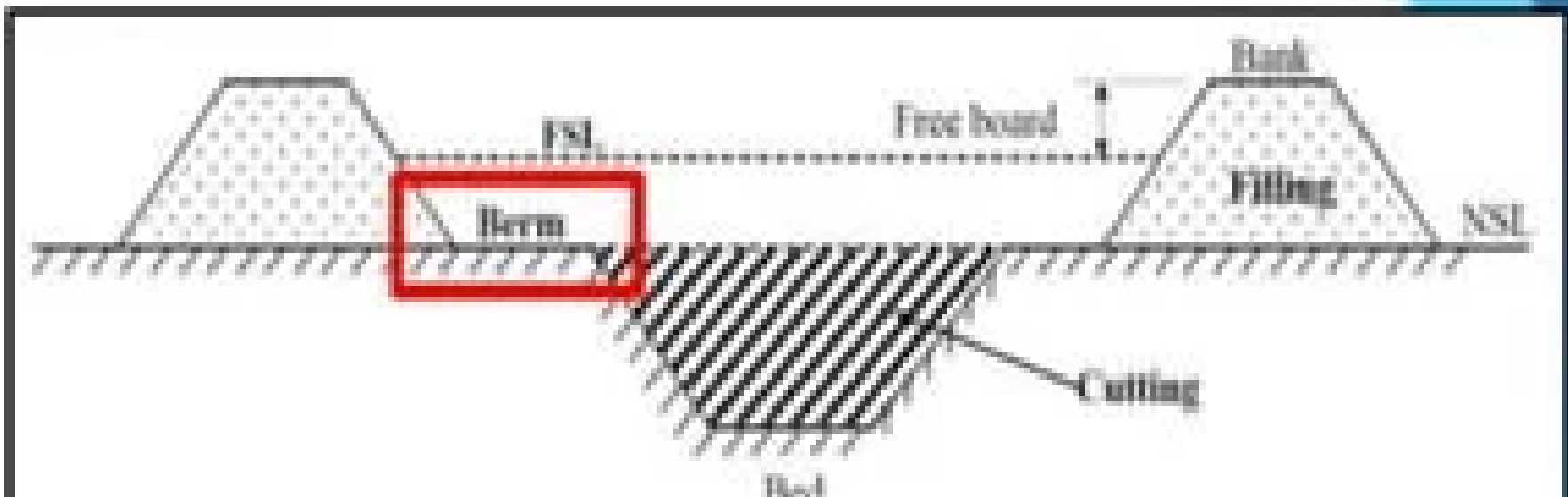
# Components of canal:-

- Side slopes
- Berms
- Free board
- Land width
- Dowla or Dowel (The dowel is a short rail)
- Spoil banks (When earthwork in cutting is done, the maximum width of canal bank embankment, the extra soil deposited in the form of heaps on both banks or only one bank is known as Spoil Bank.)
- Borrow pit (Borrow pits are used for the purpose of filling and embankments, earth has to be excavated by digging trenches along the side of road or canal or a railway track.)



## 2. BERM

- Berm is the horizontal distance left at ground level between the toe of the bank and top edge of cutting.
- Berm is provided additional strength to bank and help in safe guarding them against breaches.
- It is also provided for future widening of channel.



**Thank you!**