Certificate Course on Participatory Irrigation Management (CCPIM)

Module 13- Maintenance works of canal by Water User Associations

Topic 13.2- Preparation of Work Estimates

Topic 13.2

Preparation of Work Estimates

Module 13 includes:

13.1   Canal Walkthrough, Measurements of Works, Priority

13.2   Preparation of Work Estimates

13.3   Administrative, technical approval of works and selection of agency for carrying out the works.

13.4   Quality control of works and their payments.

Estimation of works

After the walk-through of the Canal is over and the works are identified and prioritized, the entire estimate of carrying out these urgent works should be prepared . For this, the amount of work to be done in

preparing the estimate and the work that is to be done at which place of the canal, should be known and its details should be mentioned.

When the quantity of work is known, then the rate at which the work is to be done (if any rate is fixed by the canal department or market rate or any rate decided by committee), the cost of the work is taken out by multiplying the quantity by the rate. In this way, all the necessary work estimates are prepared.

Calculation of Silt quantity

Cleaning of silt (soil, sand, silt etc.) from the canal is done under regular maintenance works. The method of extracting the quantity of silt cleaning is given below.

To measure the deposition of silt in the canal, paved profiles of the canal, called **bed bars**, are made at regular distances (100 m). Measure the width of the bottom of the canal (B-1) and the width of the silt surface (B-2) on the bed bar as illustrated below. Also, taking into account the width of the canal, take the height of the deposited silt at three to five places. For example, the height of silt is measured at five places in the picture below.
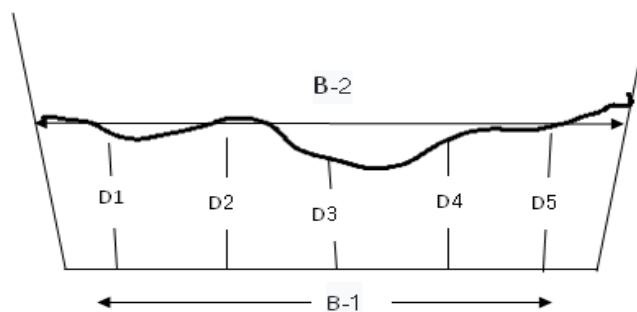
Now fill the measurement in the following table as per the above picture and extract the quantity of silt.

Description of quantity of work (silt disposal)

| Sr. No. | Chainage | canal Bed width (B_1) | silt depth | | | | | average depth $[(4)+(5)+(6)+(7)+(8)]/5$ (D) | area of cross section $(B_1+B_2)/2 \times$ D | distance between two consecutive Chainage (L) | quantity of work (10X11) |
			D1	D2	D3	D4	D5				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)

Summary of the cost of required works

In addition to the quantity of silt, the quantity of other necessary works should also be extracted by the committee in collaboration with the Water Resources Department or with the help of its members. After this, according to the market rate of the works or the rate list issued by the Water Resources Department, the summary of the cost of the necessary works should be made in the format given below.

Work Summary

Sr.No.	Name of Work	Job Description	Quantity of work	Rate	Work cost
Total cost					A
Total cost					B
Total cost					C
Total cost (A+B+C+.......					

Example: Estimation of Works

Question - During the walk-through, the Water User Association agreed to do the following works, details of which are given in the table.

S. No.	Work Description	Quantity/ Measurement	Rate (Rs.)	Cost
1.	Weed removal	400 m2	4.00 per square meter	
2.	Bandha removal work	(4.0mX2.0mX1.5m)	25.0 per cubic meter	
3.	Removal of silt	4000 cubic meter	30.0 per cubic meter	
4.	Closing the cutting	250 cubic meters	25.0 per cubic meters	

Make an estimate of the above works. That is, calculate the total cost incurred on the works.

Answer - 1. Weed removal-

Cost = Quantity X Rate = (400X4.00 = 1600 / = 00 Rs.)

2. Bandha-removal work-

Cost = Quantity X Rate = (4.0X2.0X1.5) X25 = 300 /= 00 Rs.

3. Removal of silt

Cost = Quantity X Rate = 4000X30 = 120000/ = 00 Rs.

4. Closing the cutting-

Cost = Quantity X Rate = 250X25 = 6250 / = 00 Rs.

Total cost = 1600 + 300 + 120000 + 6250 = 128150 /= 00 Rs.

Exercise work 1- Tender notice was published for carrying out the above works, in which Ram Lakhan - contractor took the tender and deposited in office by filling the rates. In the tender, rates of the above four works are Rs 3.0, 22.0, 28.0 and 24.0 respectively which was quoted by the contractor for getting all the works done. In how many rupees all the four works will be done by the contractor. Calculate it

Exercise work 2- If item no. 1 and 2 of the above works are done by the Water User Association by Shramdaan, then how much money will be saved of the Water User Association Calculate it?

Exercise work 3- The bed width of a canal is 3.0 m. A earthen bandha of one meter hight and 2.0 m width has been tied by a farmer in the entire bed width. Calculate the volume i.e. quantity of the earth in the bandha. And if a labour does 2.0 cubic meters of earthwork per day and takes 300/=00 wage per day. So what will be the total cost and the time taken to remove the bandha.