

Estimation and Cost Evaluation - II
(CEP-604)

6th Sem., Civil Engg.

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Important Questions :-

*02 marks :-

- 1- Define culvert.
- 2- What is face wall of a culvert?
- 3- ~~What~~ What is the minimum diameter of concrete pipes provided in a pipe culvert?
- 4- What is kerb in culvert?
- 5- What is skew culvert?
- 6- What is crest wall & curtain wall?
- 7- What is an adewate?
- 8- What is syphon?
- 9- What is drop pit?
- 10- Define normal lead & lift in case of earthwork.
- 11- Explain mid-sectional area method to estimate quantity of earthwork.
- 12- What is muster roll?
- 13- What is a cut-off roll?
- 14- What is earnest money?
- 15- What is subsidiary cash book?
- 16- What is book transfer roll?

- 17 - What is the purpose of security deposits?
- 18 - What is use of measurement book.
- 19 - Define debit & credit.
- 20 - What is running bill?
- 21 - What is major work & petty work?
- 22 - Define cash.
- 23 - What is advanced payment?
- 24 - Define labour report.
- 25 - What is issue rate?
- 26 - What is final bill?
- 27 - What is tender notice?
- 28 - Define annual repair?
- 29 - Define item rate contract.
- 30 - What is voucher?

*05 marks :-

→ short notes on :-

- (i) Contingency budget & Earned money
- (ii) Suspense account & Subhead account
- (iii) Administrative approval & Technical sanction
- (iv) Standard measurement book.

- (v) Work order .
- (vi) Temporary establishment .
- (vii) classification of stone .
- (viii) Piece work agreement .
- (ix) Labour contract & item rate contract
- (x) Annual repair & special repair
- (xi) Work order
- (xii) classification of works
- (xiii) Final payment, intermediate payment
- (xiv) Measurement book .
- (xv) Method of labour payment .

* 15 marks & 20 marks :-

1- The dimension of a R.C.C slab is $4.00\text{m} \times 5.00\text{m} \times 12\text{cm}$ deep. Reinforcement of 12mm dia rods are placed in short span @ 15cm c/c of the total number of rods, 16 numbers have been cranked and hooked at the ends. The 12mm dia. rod weight 0.89 kg per meter . To hold the cranked portion 4 numbers 10mm dia straight & hooked rods have been used. The 10mm dia rods are placed in a direction of long span @ 20cm c/c and all are straight & hooked at ends. The 10mm dia. rods are

weight 0.62 kg/m . The covers are 1.8cm at the bottom and 25cm on all sides. Assume any other dimensions not given. Estimate the total weight of steel required for reinforcement of the slab.

2-

Prepare a detailed estimate of a slab culvert of 1.50 metre span and 4.00 metre roadway from the given drawing (Fig.). The general specifications are as follows :-

Foundation concrete shall be of cement concrete 1 : 3 : 6 with stone ballast and coarse sand. Masonry shall be of first class brickwork in 1 : 4 cement coarse sand mortar. Slab shall be of R.C.C. pointed 1 : 2. Road shall be provided with 10 cm thick wearing coat of 1 : 2 : 4 cement concrete. Assume suitable rates.

R.C.C. SLAB CULVERT 1.50 m SPAN with standard modular bricks

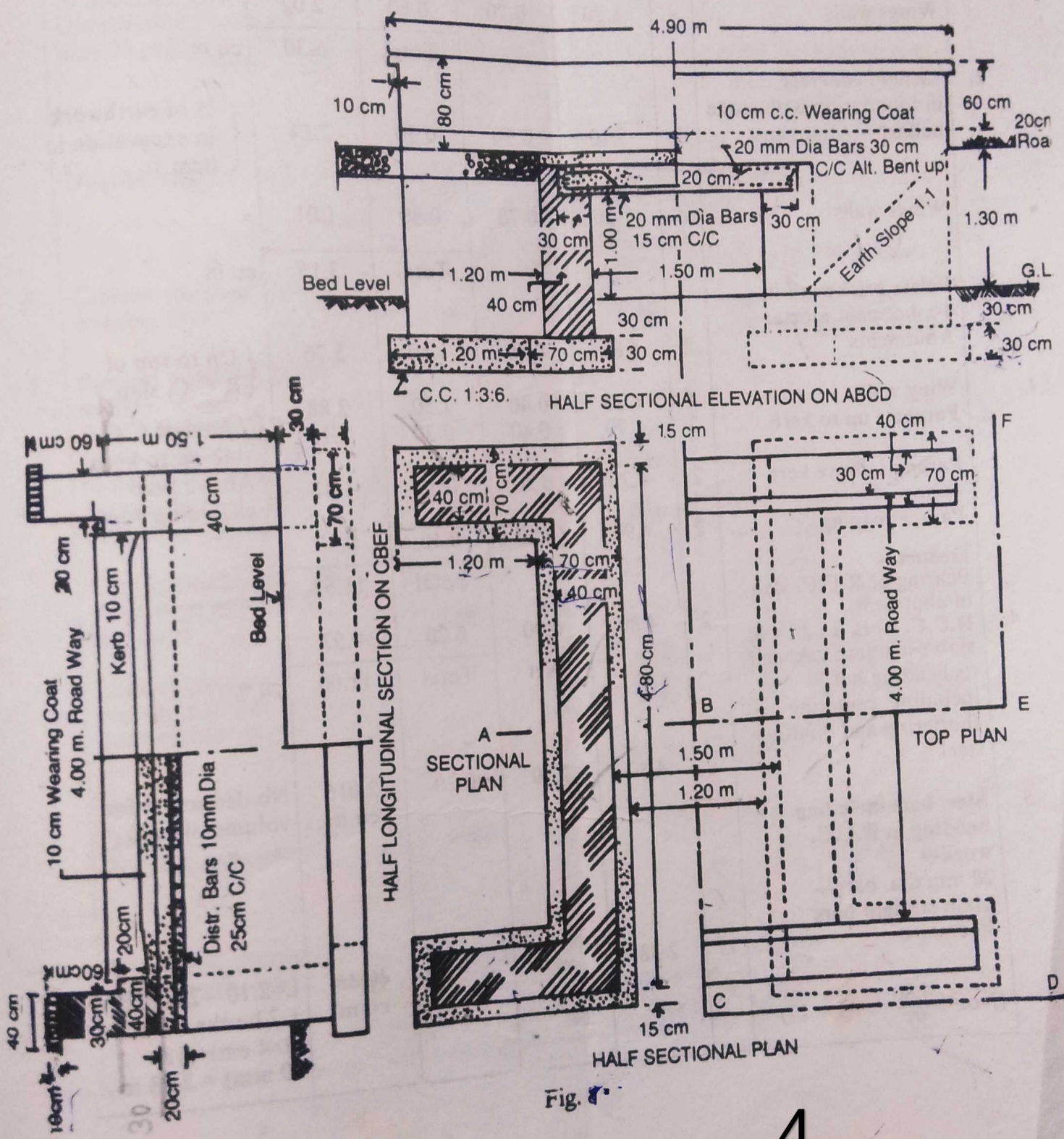


Fig. 4

3

Prepare a detailed estimate of Hume pipe Culvert of three pipes each of 60 cm diameter from the given plan and elevations Fig. 1. Foundation concrete shall be of 1 : 4 : 8 cement concrete and brickwork shall be of first class in 1 : 6 cement sand mortar. Exposed surfaces shall be pointed with 1 : 2 cement sand mortar. Assume suitable rates.

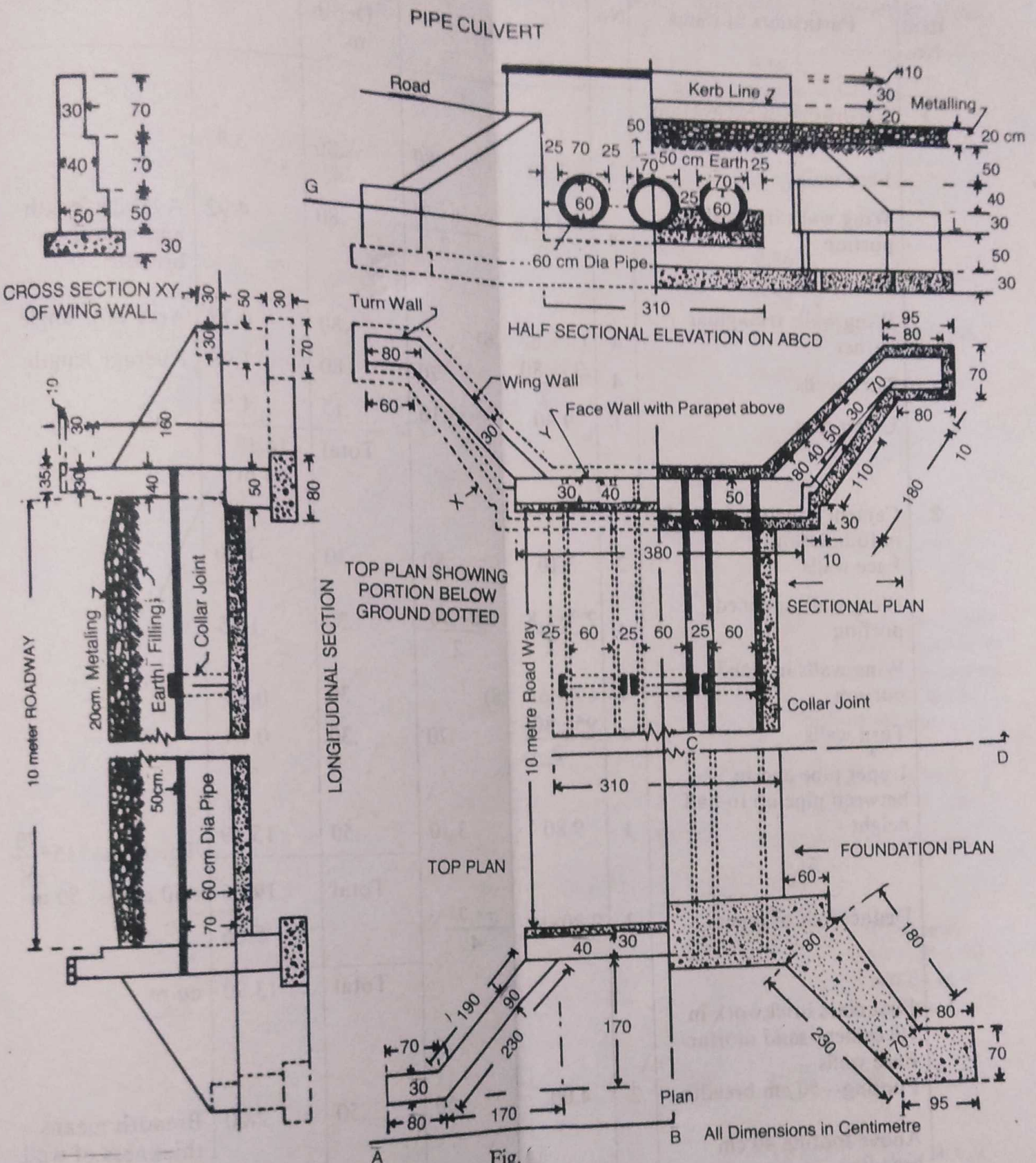


Fig. 1

5

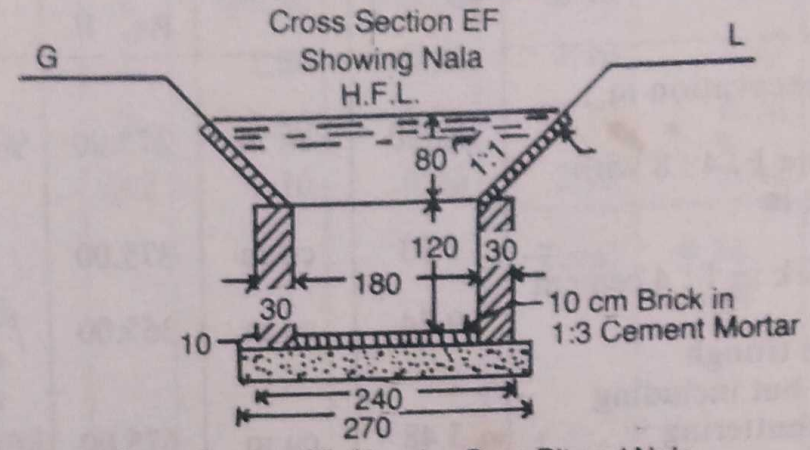
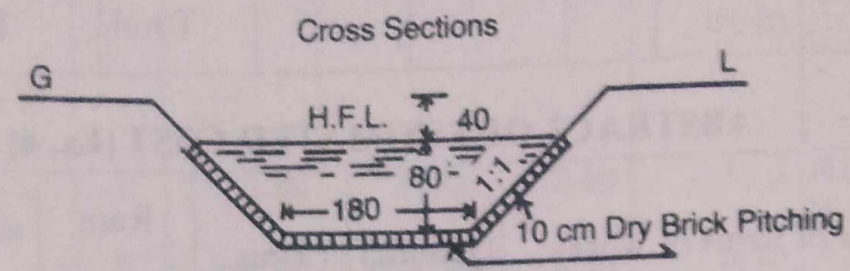
4

- Prepare a detailed estimate of a Drainage Syphon across a minor from the given drawing, Figs.

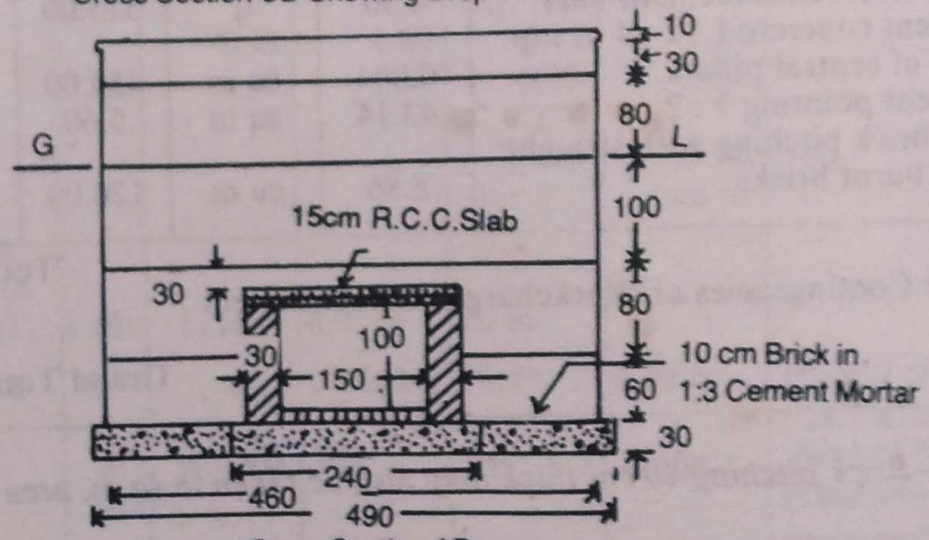
Foundation concrete shall be of 1 : 4 : 8 cement concrete with brick ballast. All brickwork shall be of 1 : 4 cement mortar. Exposed surfaces of brickwork shall be struck pointed with 1 : 2 cement mortar. Brick pitching shall be of dry brick with straight over burnt bricks.

Assume suitable rates for the different items of work.

DRAINAGE SYPHON



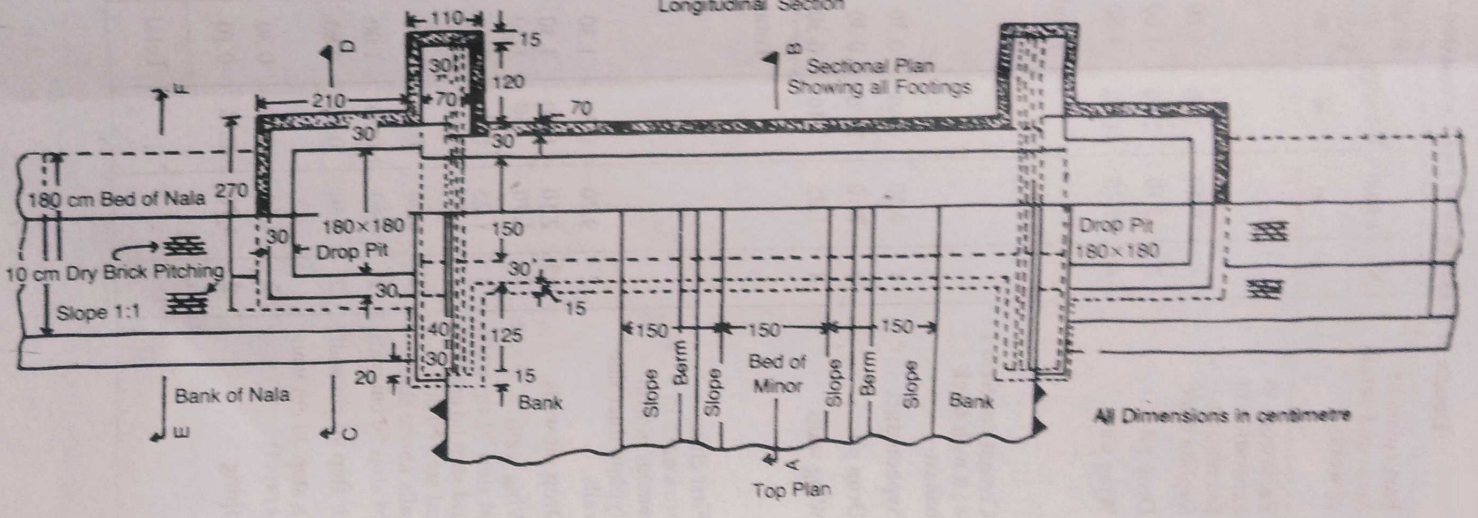
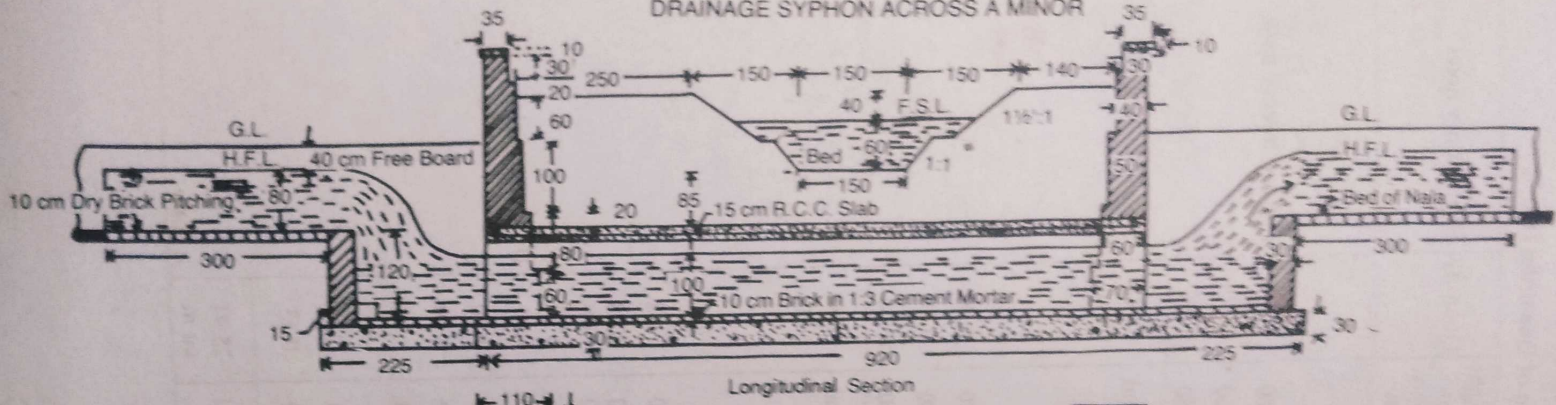
Cross Section CD Showing Drop Pit and Nala



Cross Section AB Showing Duct and Wing Walls

Fig. 9

DRAINAGE SYPHON ACROSS A MINOR



All Dimensions in centimetre

Fig. 6

4 — Prepare a detailed estimate of a 60 cm fall for a distributory of 360 cm bed width and 90 cm depth of water, from the drawing given (Fig.). Side slope of bank and channel are $1\frac{1}{2} : 1$. The general specifications are as follows.

Foundation and apron concrete—Cement concrete 1 : 3 : 6 with stone ballast.

Masonry—All brickwork shall be of I-class in 1 : 4 cement mortar.

Pointing—All exposed surfaces shall be pointed with 1 : 4 cement and sand mortar.

Pitching—Pitching shall be of dry brick with straight over burnt bricks.

Rates—Assume suitable rates.

8

5- Calculate the quantity of earthwork for a portion of the proposed road from the following data:-

Chainage	15	16	17	18	19	20	21	22	23
R.L of ground	100.5	101.0	100.8	102.9	101.0	100.8	101.5	100.0	100.0
R.L of Formation	100.0	upward gradient 1:200 →							

Distance between two consecutive chainage = 4m
 Formation width = 10m, side slope (Banking) = 2:1
 side slope (cutting) = 1.5:1

6- Estimate the cost of earthwork for a portion of road from the following data:-

Road width at the formation surface is 8m, side slopes 2:1 in banking & 1½:1 in cutting. length of chain is 30m.

Chainage	20	21	22	23	24	25	26	27	28	29	30
Ground level	71.20	71.25	70.90	71.25	70.80	70.40	70.20	70.30	69.10	69.45	69.70
Formation level	70.00	← upward gradient 1 in 200 →									

7- Work out the earthwork for road from the following data:

Formation width = 10m, slope in cutting = 1:1

slope in filling = 2:1

Formation level of R.D = 105.00

Downward gradient = 1:100

R.D's	0	100	200	300	400	500	600	700
MSL's	100.30	102.50	99.00	103.50	104.40	106.40	105.30	105.00

8- Prepare a detailed estimate of a RCC roof slab of 3.5m clear span and 5m long with the following data:-

Slab thickness = 12cm

Main bar = 10mm dia., 15cm c/c with alternative bent up.

Distribution bar = 6mm dia. 20cm c/c

Assume any other data.

9- Explain the step by step procedure with the related documents for awarding a construction of NH road to a contractor by NH (Govt.) authority.

10- Estimate the items involved for construction of a Water Bound Macadam road from the following data:

Length of road = 100m, Formation width = 10m

Metalled width = 8m

Thickness of grade-I metal soiling = 90mm

Wearing coat of grade-II metal = 12cm thick loose & 8cm thick compacted.

Surface to be finished with 2 coats of bitumen as given below:-

First finishing coat = 12mm chips @ 0.02m^3 and bitumen @ 1.24kg per m^2 of road surface

Second finishing coat = 6mm chips @ 0.02m^3 and bitumen @ 1.24kg per m^2 of road surface.

Consumption of fuel @ 0.45kg per kg of bitumen.