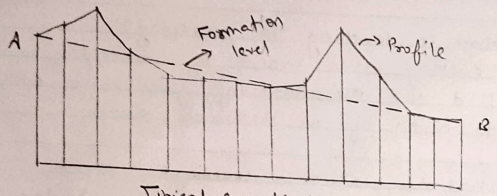
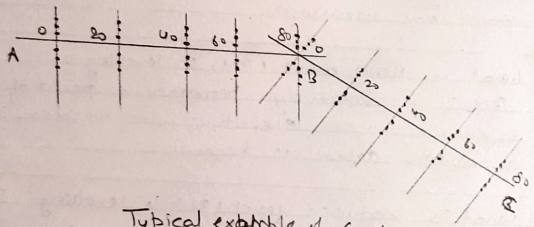


Typical example of Profile.



Typical example of Cross section

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Exp. 3 (B)

Object:- To carry out profile leveling to plot longitudinal & cross sections for road.

Apparatus:- Dumpy level, leveling staff, tape, tripod stand.

Theory:- Profile leveling is the process of determining the elevations of points at short measured intervals along a fixed line such as the center line of railway, canal or sewer.

Cross sections are run at right angle to the longitudinal profile to on either side of it for the purpose of lateral outline of the ground surface.

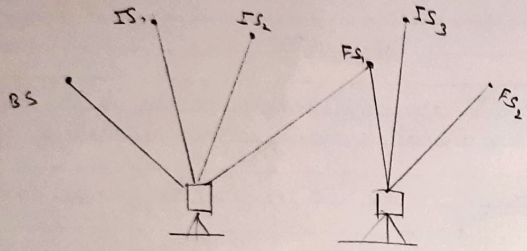
Procedure:-

(i) Set up the level to one side of profile line.

(ii) Mark points A, B, C... at every 20m along the profile line.

(iii) Mark the cross sections points $A_1, A_2, B_1, B_2 \ldots C_1 \ldots C_2$ respectively on both sides at 5m interval.

(iv) Take back sight on the bench mark & along the profile line take FS/IS at A, B, C... & also at cross section points $A_1, A_2, \ldots B_1, B_2, \ldots C_1 C_2$.



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Precautions

1. In case of dumpy level, it is to be fixed at a point from where it can take maximum reading.
2. Instrument should be leveled properly.
3. Bubble should be in center before taking reading.
4. Staff should be held vertically.

Observation table:-

Station	B.S	I.S	F.S.	Rise	Fall	R.L.	Benchmark
B.M.	1.46					100	RM = 100
1.		1.495			-0.035	99.965	
2.		1.610			-0.115	99.85	
3	1.505		1.500	+0.11		99.96	CP
4.		1.700			-0.135	99.765	
5.			1.715		-0.015	99.75	
6.							
	ΣBS =		ΣFS =	ΣRise	ΣFall	ΣR.	
	2.965		3.215	= 0.11	= 0.36		

Arithmetical check.

ΣBS − ΣFS = |Rise − Fall| = RL1 − RL(last)

2.965 − 3.215 = 0.11 − 0.36 = 100 − 99.75

⇒ 0.25 = 0.25 = 0.25

Hence Proved

Result The difference between the sum of back sight and the sum of fore sight = diff. between the sum of rise and the sum of fall = the diff. between the last RL and first RL are equal to 0.25

Viva Question

Q1 What is the line of sight in levelling?
The imaginary line from centre of object lens passes through intersection of cross hair of diaphragm to the surveyor eye, called line of sight.

Q2 What is back sight in levelling?
Ans The first staff reading taken by the surveyor after the levelling instrument is set up and levelled

Q3 What is Fore sight (F.S) in reading?
It is staff reading taken on a point whose elevation has to be determined through levelling process. It is the last reading taken before the instrument is shifted.

Q4 What is HI in levelling?
Ans Height of instrument is the elevation or RL of the line of sight with respect to the datum.
[HI = RL of BM + BS]

Date __/__/____

Q5 What are the different type of levelling staff?

Ans Solid staff
Folding staff
Telescope staff

Q6 What is least count of levelling staff?

Ans 5mm = 0.005 m