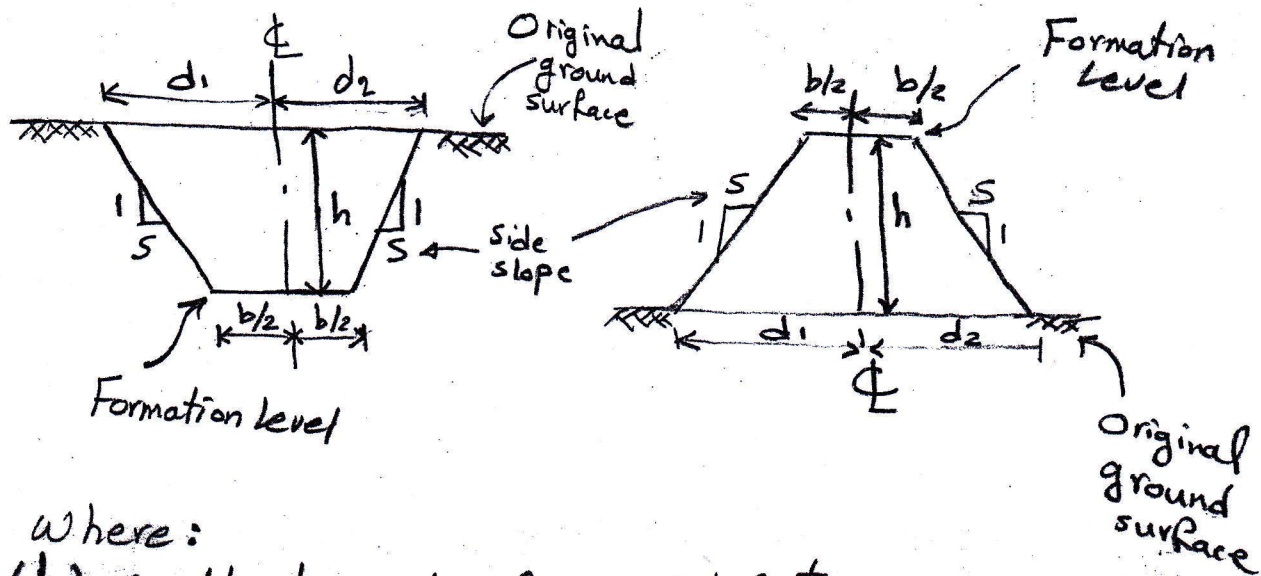


# Kinds of cross section

## 1. One-level section



Where:

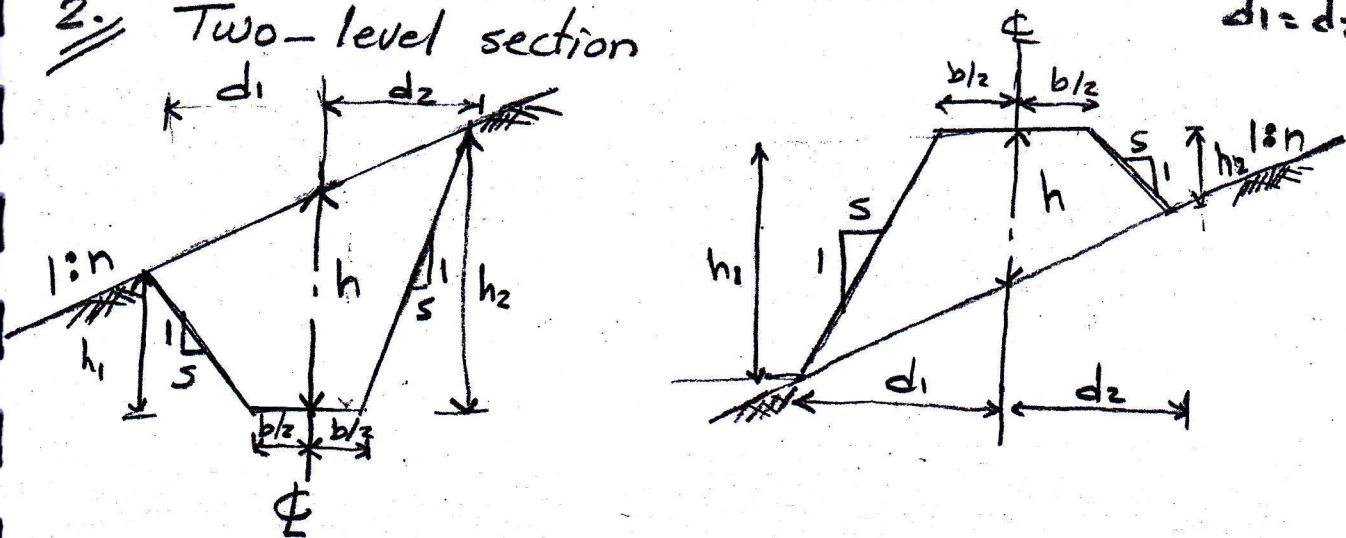
(h) is the height of  $\Phi$  Cut

(b) is the formation width at formation level.

(s) is the side slope.

(d) is the side width (with the original ground surface).  $d_1 = d_2$

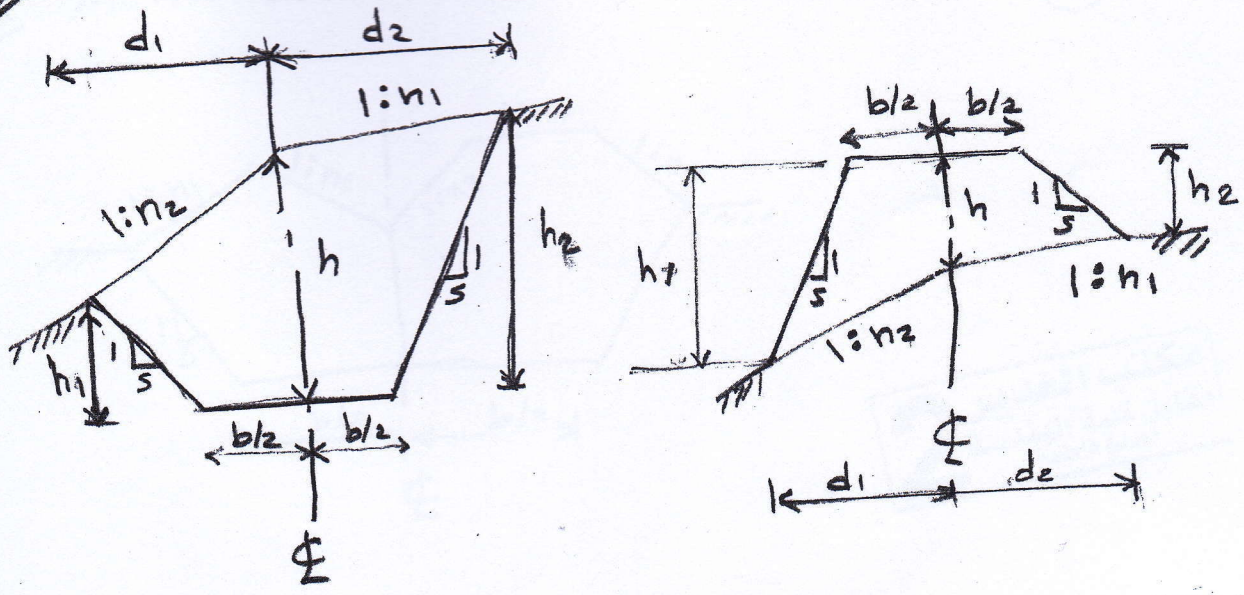
## 2. Two-level section



(n) is the lateral slope of the original ground surface

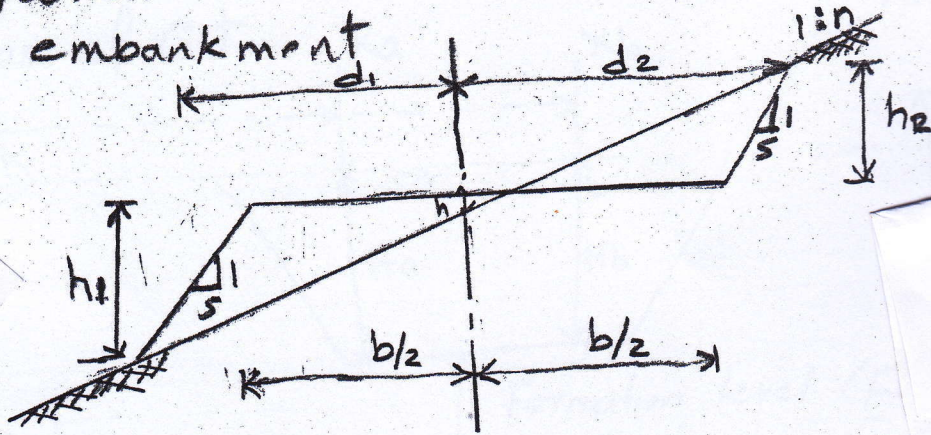
3. Three-level section

(2)

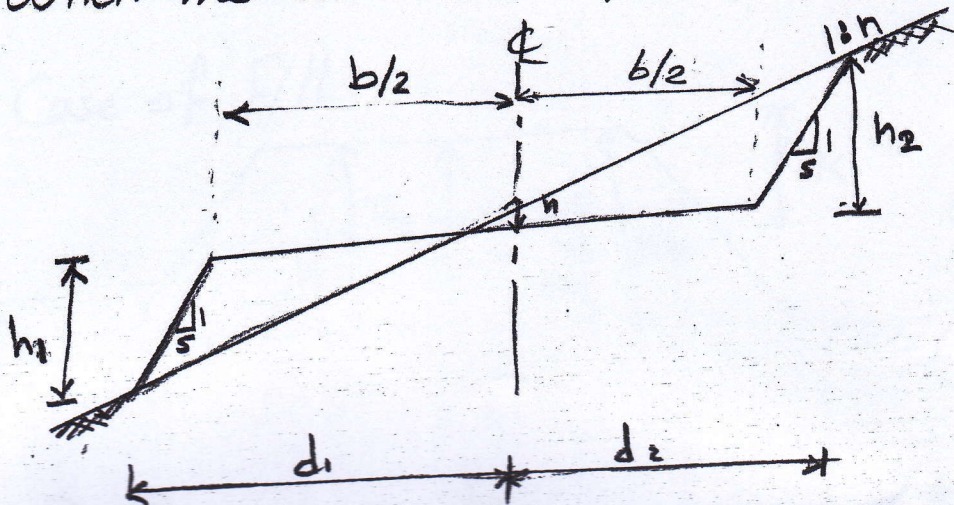


4. Side hill two level section

(A) When the center line of the formation is in embankment

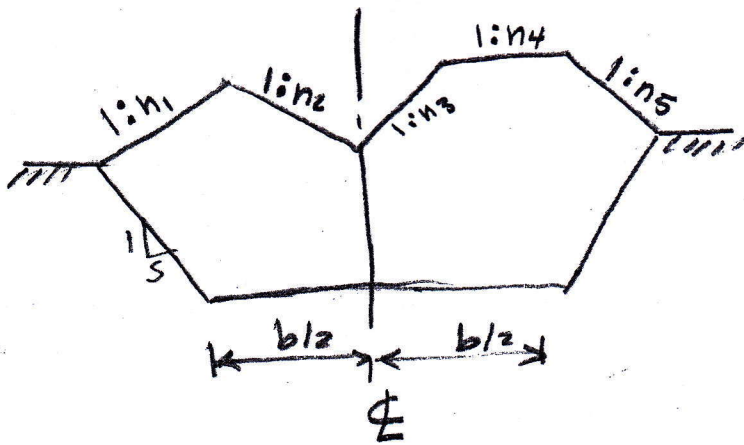


(B) When the center line of the formation is in excavation



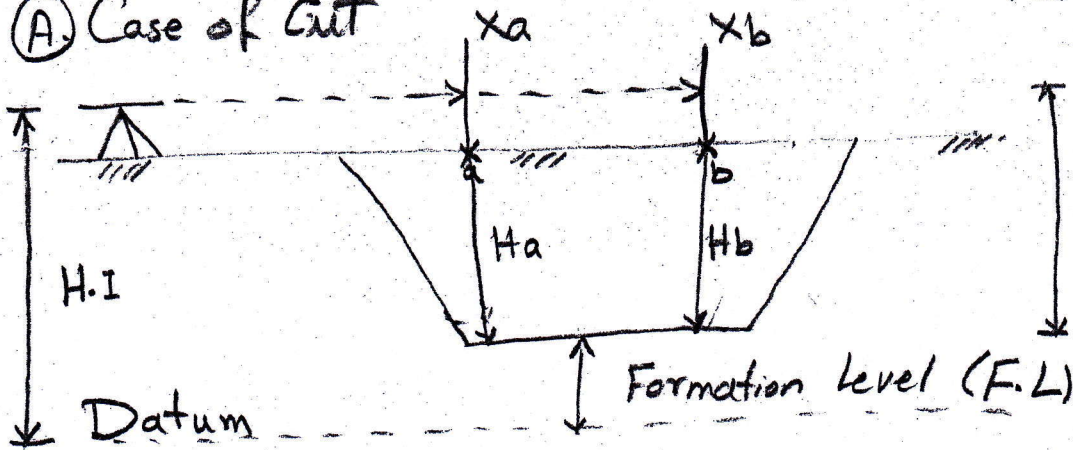
S: Multi-level section

(3)



Finding the depth of Cut and Fill

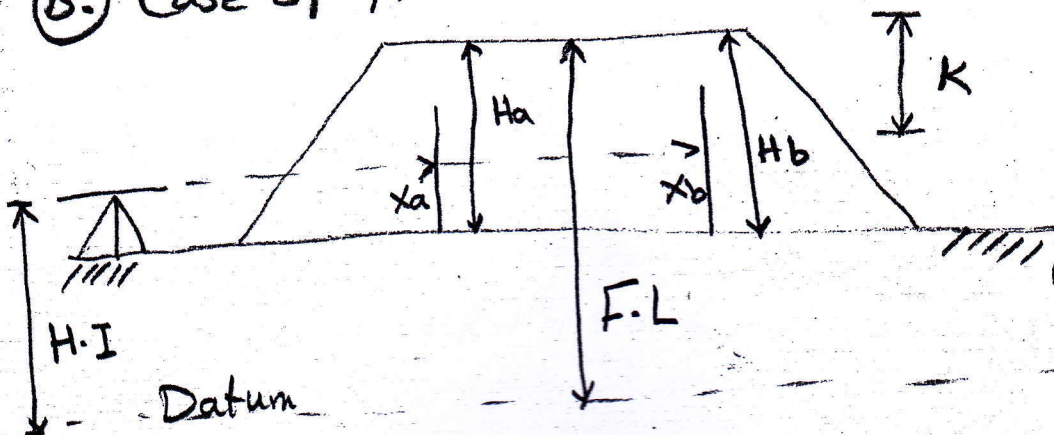
(A) Case of Cut



$x_a$  and  $x_b$  is the staff reading at a and b, respectively.

$$\begin{aligned} H.I. - F.L. &= K \\ H_a &= K - x_a \\ H_b &= K - x_b \end{aligned}$$

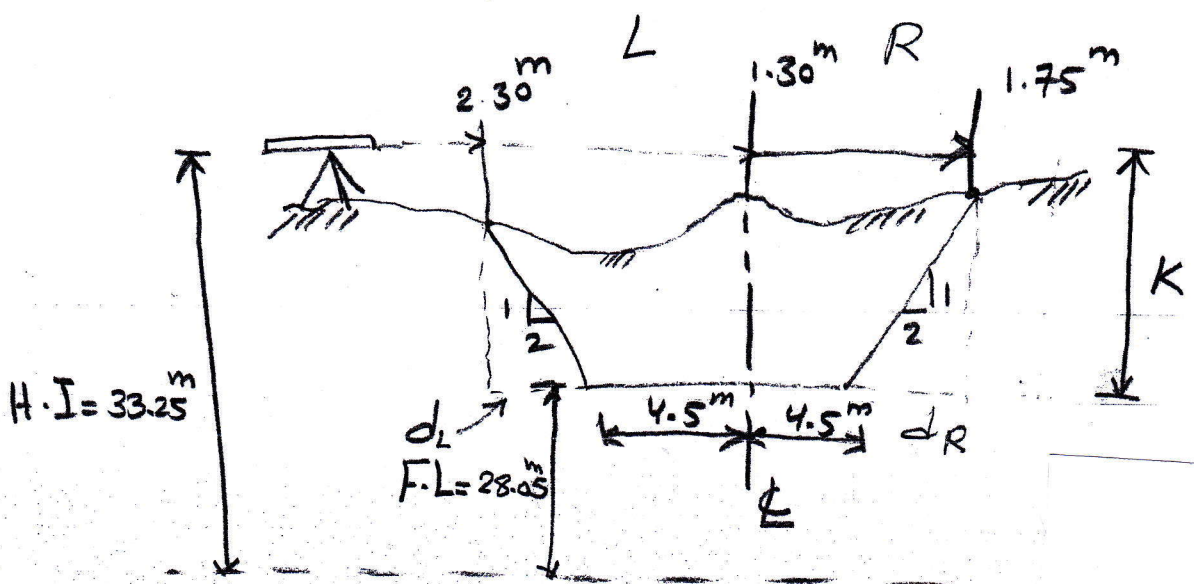
(B) Case of Fill



$$\begin{aligned} F.L. - H.I. &= K \\ H_a &= K + x_a \\ H_b &= K + x_b \end{aligned}$$

(4)

ample (I) / The road is width 9m, side slope 1/2, H.I = 33.25m formation level = 28.05m, staff readings 1.30m  $\Phi$ , 1.75 R, 2.30 L. Calculate the depth of cut for three staffs and the distance from  $\Phi$  to the staff position.



$$H.I - F.L = K \Rightarrow 33.25 - 28.05 = 5.20\text{m}$$

$$R - x = H \Rightarrow H_L = 5.20 - 2.30 = 2.90\text{m}$$

$$H_\Phi = 5.20 - 1.30 = 3.90\text{m}$$

$$H_R = 5.20 - 1.75 = 3.45\text{m}$$

distance from the  $\Phi$  to staff at left road

$$\frac{1}{2} = \frac{2.9}{d_L} \Rightarrow d_L = 5.8$$

$$d_L + 4.5 = 5.8 + 4.5 = \underline{\underline{10.30\text{m}}}$$

distance from the  $\Phi$  to the staff at right road

$$\frac{1}{2} = \frac{3.45}{d_R} \Rightarrow d_R = 6.9$$

$$d_R + 4.5 = 6.9 + 4.5 = \underline{\underline{11.4\text{m}}}$$