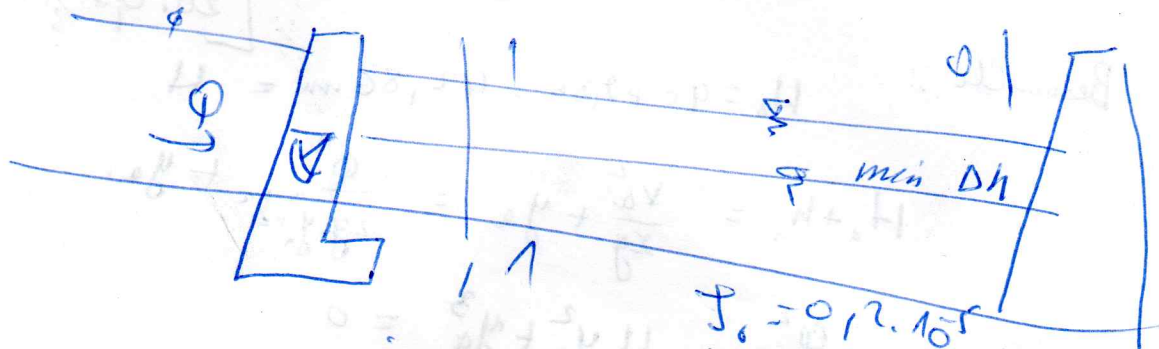
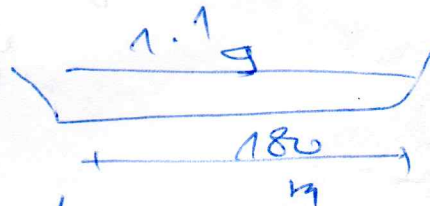


erosion du fond:



pour éviter l'érosion
augmenter la hauteur de l'eau



$I_0 = 10^{-5}$, $K_{st} = 45 \text{ m}^3$, $d_s = 0,0002 \text{ m}$
 $Q = 450 \text{ m}^3/\text{s}$, $b = 180 \text{ m}$, $L = 40 \text{ km}$

$Y_{0:0} = 7 \text{ m}$

$U_{crit} = 0,013 \text{ m/s}$ (shield)

$V_{0:0}^* = \sqrt{\frac{9,81 \cdot 7 \cdot 180}{180 + 10} I_0}$
 $V_{0:0}^* = 0,0192$

$I_0 = \frac{V^2}{K_{st} \cdot r_{hy}^3} \Rightarrow V = 5,198 \cdot 10^{-6}$

augmenter la hauteur de l'eau

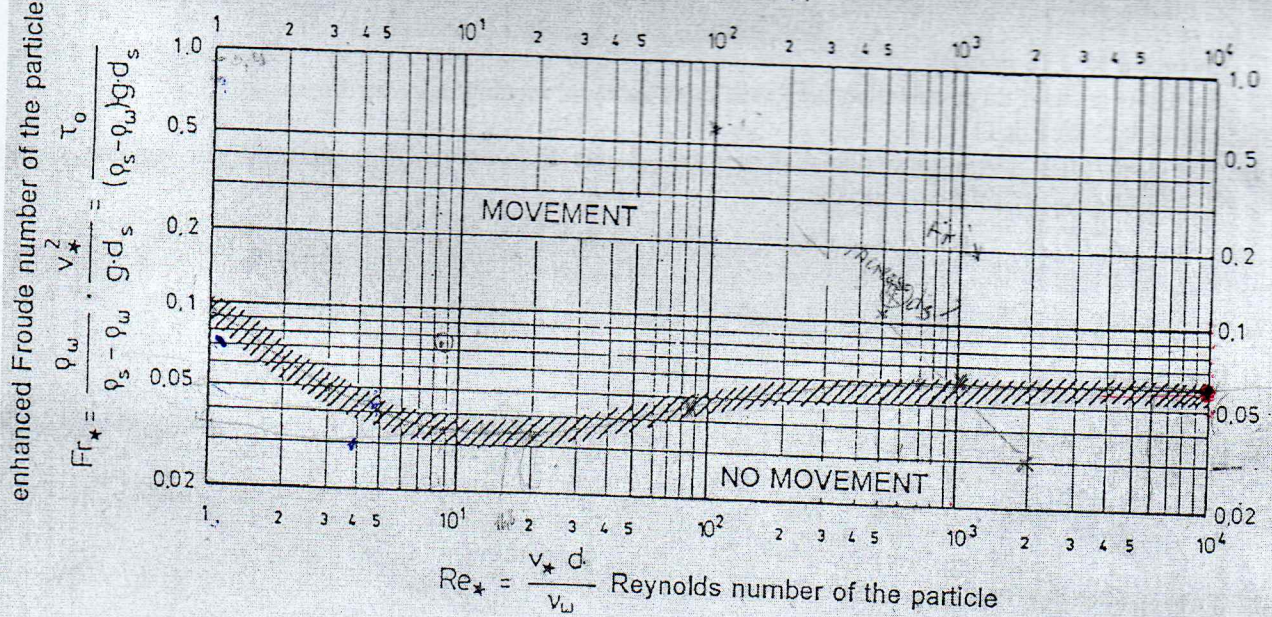
$V^* = 0,013 \text{ m/s}$

Calculer nouveau $Y_{0:0} \rightarrow V = 0,013$

$V^* = \sqrt{g r_{hy} I_0} \rightarrow Q = A \cdot K_{st} \cdot r_{hy}^{3/2} \sqrt{I_0}$

$Q = U_{crit} \cdot K_{st} \cdot r_{hy}^{3/2} \cdot b \cdot Y_{crit}$, $r_{hy} = \frac{b \cdot Y_{crit}}{b + 2Y_{crit}}$
 $450 = 0,013 \cdot 45 \cdot \left(\frac{180 \cdot Y}{180 + 2Y}\right)^{3/2} \cdot 180 \cdot Y \sqrt{10^{-5}}$

Y	Q
8	378
9,4	451,5 m



3)

Bonne chance

xy

1