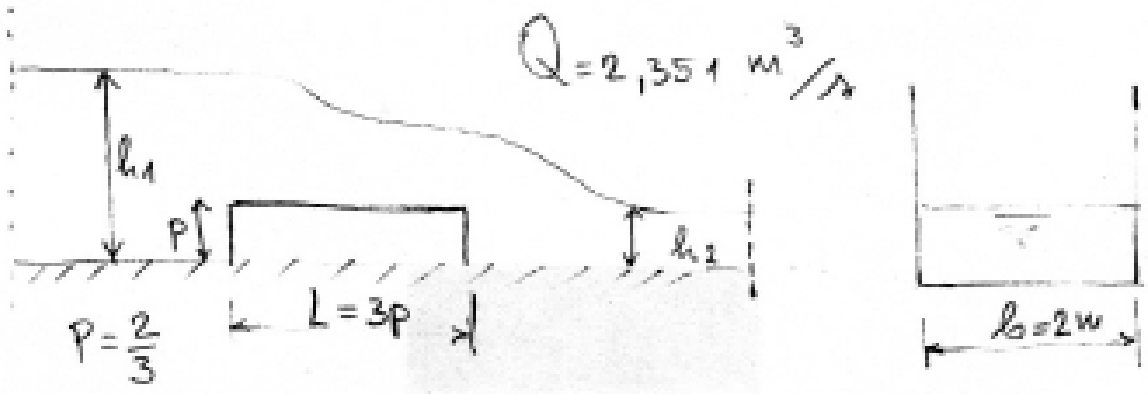
1. $b = 2$ м

$\xi_{1-p} = 0{,}20$ $\xi_{p-2} = 0{,}10$



$p = 0{,}67$ м

h_1 – глубина

h_2 – бурон

$F_r = 1$

$$\frac{Q^2 B}{g A^3} = \frac{2{,}351^2 \cdot 2}{9{,}81 \cdot (h_{kr} \cdot 2)^3} = 1$$

$$(h_{kr} \cdot 2)^3 = 1{,}127 \Rightarrow h_{kr} = 0{,}52 \text{ м}$$ ✓

$$V_{kr} = \frac{Q}{A} = \frac{2{,}351}{2 \cdot h_{kr}} = 2{,}26 \frac{\text{м}}{\text{с}}$$

$E_1 = E_{kr} + \Delta E$

$$h_1 + \frac{V_1^2}{2g} = (p + h_{kr}) + \frac{V_{kr}^2}{2g} + \xi_{1-p} \cdot \frac{V_{kr}^2}{2g}$$ ✓

$$V_1 = \frac{Q}{A} = \frac{2{,}351}{2 \cdot h_1}$$

$$h_1 + \frac{(2{,}351)^2}{8 h_1^2 \cdot 9{,}81} = 0{,}67 + 0{,}52 + \frac{2{,}26^2}{2 \cdot 9{,}81} + 0{,}2 \cdot \frac{2{,}26^2}{2 \cdot 9{,}81}$$

$$h_1 + \frac{0{,}07}{h_1^2} = 1{,}19 + 0{,}26 + 0{,}0521$$

$$h_1 + \frac{0{,}07}{h_1^2} = 1{,}502$$

$h_1 = 1{,}47$ м ✓

① $E_{KR} = E_2 + \Delta E$

$$(p + h_{nR}) + \frac{V_{KR}^2}{2g} = h_2 + \frac{V_2^2}{2g} + 0{,}1 \cdot \frac{V_2^2}{2g}$$ ✓

$$V_2 = \frac{Q}{A} = \frac{2{,}351}{2 \cdot h_2}$$

$$0{,}67 + 0{,}52 + \frac{2{,}26^2}{2 \cdot 9{,}81} = h_2 + \frac{2{,}351^2}{8 h_2^2 \cdot 9{,}81} + 0{,}1 \cdot \frac{2{,}351^2}{8 h_2^2 \cdot 9{,}81}$$

$$1{,}45 = h_2 + \frac{0{,}0775}{h_2^2}$$

$$1{,}45 - h_2 = \frac{0{,}0775}{h_2^2}$$

$$h_2^2 = \frac{0{,}0775}{1{,}45 - h_2}$$

$$h_2 = \sqrt{\frac{0{,}0775}{1{,}45 - h_2}}$$

$h_2 = 0$

$$h_2' = 0{,}23 = \left(\sqrt{\frac{0{,}0775}{1{,}44 - 0}} \right)$$

$$h_2'' = \sqrt{\frac{0{,}0775}{1{,}44 - 0{,}23}} = 0{,}25$$

$$h_2''' = \sqrt{\frac{0{,}0775}{1{,}44 - 0{,}25}} = 0{,}25 \text{ m}$$

$\Rightarrow h_2 = 0{,}25$ m ✓

b) $h_1 = 1{,}47$ m

$$F_R = \frac{Q^2 B}{g A^3} = \frac{2{,}351^2 \cdot 2}{9{,}81 \cdot (2 \cdot 1{,}47)^3} = \frac{11{,}054}{243{,}29} = 0{,}044 < 1$$

mirno područje

$h_2 = 0{,}25$

$$F_R = \frac{Q^2 B}{g A^3} = \frac{2{,}351^2 \cdot 2}{9{,}81 \cdot (2 \cdot 0{,}25)^3} = \frac{11{,}054}{1{,}226} = 9{,}016 > 1$$ ✓

burno područje