

ENERGY

$$H = y + \frac{v^2}{2g}$$

$$H = y \left(1 + \frac{F^2}{2} \right) \leftarrow$$

Froude

$$F = \frac{v}{\sqrt{yg}}$$

$$v^2 = F^2 yg$$

$$F = \frac{Q}{By \sqrt{yg}}$$

$$F = \frac{Q}{By^{1.5} \sqrt{g}}$$

$$H = \left(\frac{Q}{B} \right)^{2/3} \left(\frac{1}{F \sqrt{g}} \right)^{2/3} \left(1 + \frac{F^2}{2} \right) \leftarrow y = \left[\frac{Q}{B F \sqrt{g}} \right]^{2/3}$$

$$\frac{BH^{1.5}}{Q} = \frac{\left(1 + \frac{F^2}{2} \right)^{1.5}}{F \sqrt{g}}$$

$$Q = C B H^{1.5}$$

$$C = \frac{F \sqrt{g}}{\left(1 + \frac{F^2}{2} \right)^{1.5}}$$

When $F = 1$ & $g = 32.2$

$$\therefore C = 3.09$$