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Q2 Discharge $Q = 400\ l/sec$

$S = 1/200$

$C = 50$

Let width of channel = B,

Depth of channel = y

Most economical dimensions for rectangular channel

$$R = y/2 \quad \& \quad B = 2y$$

Discharge is given by Q

$$AC\sqrt{RS} = By\,C\sqrt{RS}$$

$$Q = 2y^2 C\sqrt{\frac{y}{2} \times S}$$

$$\frac{400}{1000} \times 2y^2 50\sqrt{\frac{y}{2}} \cdot \times \frac{1}{2000}$$

$$y = 0.577 = 0.58\,m$$

Depth $y = 0.58\,m$

$$B = 2y = 2 \times 0.58 = 1.16\,m$$

Width $\Rightarrow 1.16\,m$