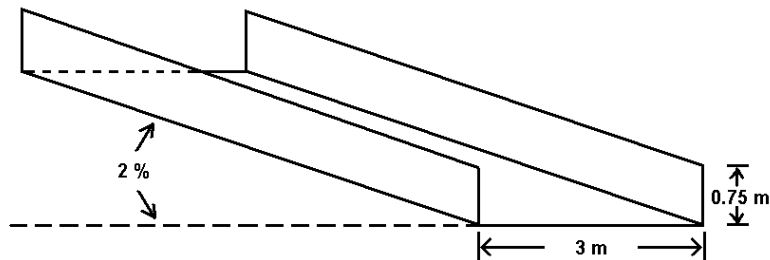# TOPIC

Fluids – Section X – Question 6

QUESTION

A rectangular open channel (see figure below) is used to handle storm water run-off. The channel is 3 m wide and 0.75 m deep and is lined with concrete. The channel is oriented on a 2% grade and the concrete has a Manning roughness coefficient of 0.014. The maximum volumetric flow rate of water (in m^3/s) that the channel can handle is closest to:

(A) 6.4
(B) 8.4
(C) 10.1
(D) 14.3

HINTS

- Maximum flow occurs when the channel is full
- Open channel flow is represented by Manning's equation
- Hydraulic radius is flow area over wetted perimeter
- Volumetric flow rate is velocity times cross sectional area.

CONTRIBUTOR

Scott Campbell