

PARSHALL FLUMES



These are primary flow elements with a wide range of applications for measuring open channel flow.

They can be used for flow measurement in creeks, irrigation &/or drainage channels, sewer outfalls, Waste Water and Effluent Treatment Plants, etc.

Principal of Operation:

The flow rate measurement is based on the assumption that the critical flow is produced by constricting the width in the throat of the flume and then also raising the bottom.

The flow changes from “sub-critical” to “super-critical” and thus the measurement of a single depth is sufficient to determine the discharge rate through the flume.

The water level is measured and recorded either in the centre line of the approach channel using an ultrasonic level sensor or inside a stilling manhole (which can form part of Parshall flume construction itself) and by means of a float with a mechanical transfer to a flow rate, or using some form of level sensor together with an electronic scaling or conversion unit; the flow-rate of the fluid flow through the flume can be determined.

The electronic unit takes the level measurement signal and uses the “characteristic formula” for that flume to derive the flow-rate through the flume.

The main advantages of FLUMES can be summarised as follows:

- a) A relatively low energy loss (3-4 times lower than in sharp-crested weirs).
- b) A small sensitivity to a velocity distribution in an approach channel.
- c) Velocities inside Parshall flumes are generally high enough to prevent the deposition of sediments or accumulation of debris.
- d) Minimum maintenance requirements, but easy when maintenance or cleaning is actually necessary.
- e) A wide range of flow rates – flumes can be made for almost any flow range required.
- f) A long lifetime – limited by the choices of materials during construction.