effect. Shown in Figure 1 is Venturi meter with an incompressible fluid flowing through it.

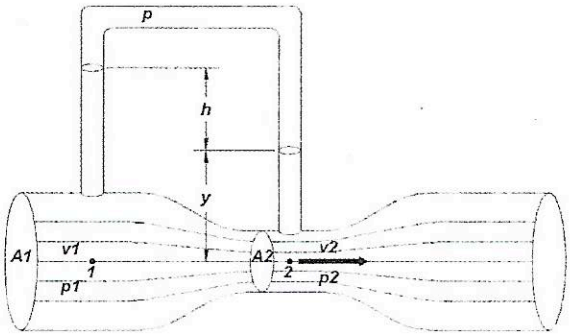

Figure 1 Venturi Meter

Appy Bernoulli's equations at horizontal sections 1 and 2, neglecting the energy losses:

$$\frac{p_1}{\gamma} + \frac{v_1^2}{2g} = \frac{p_2}{\gamma} + \frac{v_2^2}{2g} \tag{1}$$

where, p is pressure, v is velocity, γ is specific weight, and g is acceleration due to gravity. Subscript 1 and 2 represent section 1 and 2, respectively.

Apply continuity equation for incompressible flow:

$$Q = A_1 v_1 = A_2 v_2 \tag{2}$$

where, A is area.

According to the Pressure-Elevation relation:

$$p_1 = p + \gamma h + \gamma y \tag{3}$$

$$p_2 = p + \gamma y \tag{4}$$

Subtracting Eq. (4) from Eq. (3) obtains:

$$\Delta p = p_1 - p_2 = \gamma h \tag{5}$$