LOSSES IN PIPING SYSTEM

5.0   RESULT

1) Long pipe

Flow Volume = _____

Test No.	Time (s)	Flowrate, Q (m³/s)	Peizometer Tube Reading, (mm)		Experimental Head Loss, $(h_3 - h_4)$	Calculated Head Loss, $H_L = \dfrac{fLv_2^2}{2gd}$
			(3)	**(4)**		
1						
2						
3						
4						
5						

_____

2) Expansion and contraction section

Flow Volume = _____

Test No.	Time (s)	Flowrate, (m³/s)	Expansion					Contraction			
			Piezometer Tube Reading (mm)		Experimental Head Loss $(h_7 - h_8)$	Calculated Head Loss $H_L = \frac{(v_1 - v_2)^2}{2g}$		Piezometer Tube Reading (mm)		Experimental Head Loss $(h_9 - h_{10})$	Calculated Head Loss $H_L = \frac{kv_2^2}{2g}$
			(7)	(8)				(9)	(10)		
1											
2											
3											
4											
5											

Values of $(D''V)$ for water at 60°F (diameter in inches × velocity in fps)

Values of (DV) for water at 15°C (diameter in mm × velocity in m/s)

Laminar flow

Critical zone

Transition zone

Complete turbulence, fully rough pipes

Laminar flow $f = 64/\mathbf{R}$

$\mathbf{R} = 3500/(e/D)$

Hydraulically smooth pipes

Eq. (8.20)

Eq. (8.40)

Turbulent flow

$e/D = 0.000\,005$

$e/D = 0.000\,001$

Friction factor $f = \dfrac{h_L}{(L/D)\,V^2/2g}$

Relative roughness, e/D

Reynolds number $\mathbf{R} = DV/\nu$ (D ft, V fps, ν ft²/sec; or D m, V m/s, ν m²/s)