

If velocity of flow unknown, assume rough turbulent flow

Total head loss $h_{\text{loss}} = 2 \text{ m}$
Pipe diameter $D = 600 \text{ mm}$
Relative roughness $k_s = 1 \text{ mm}$ $k_s/D = 0.001667$
Pipe length $L = 10 \text{ m}$ $S = 0.2 \text{ m/m}$ $= 1 \text{ in}$ 5

Area $A = 0.282743339 \text{ m}^2$
Hydraulic Radius $R = 0.15 \text{ m}$ $R=D/4$ Round Conduit
Reynolds Number $R_f = 911527.9736$
Kinematic viscosity $n = 1.01E-06 \text{ m}^2/\text{s}$ water = $0.9E-6$ @ 25 deg.
= $1.0E-6$ @ 20 deg.
= $1.3E-6$ @ 10 deg.

Colebrook formula $f = 0.02$

Darcy-Weisbach equation $V = 10.26 \text{ m/s}$

$Q = 2.901 \text{ m}^3/\text{s}$
 250.67 MI/day

Check Rough Turbulent Assumption

$Re = 6095763$ Solution Correct

$V = 21853.96 \text{ m/s}$
 $Q = 6179.062 \text{ m}^3/\text{s}$