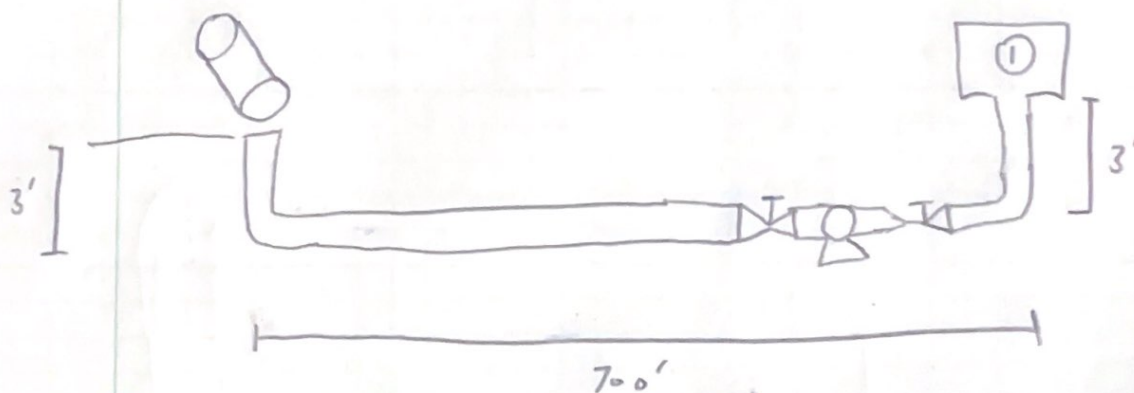


1) Key

1 storage tank

 Gate Valve open

 Pump


$$D = \left(\frac{4Q}{\pi V} \right)^{1/2} = \left(\frac{(4)(.003 \frac{m^3}{s})}{(\pi)(3 \frac{m}{s})} \right) = .03568 \text{ m} = 1.57 \text{ in} \approx 3 \text{ in} = .0779 \text{ m}$$

$$Q = \frac{15000 \text{ gal}}{6 \text{ hours}} \times \frac{1 \text{ hour}}{60 \text{ min}} = 41.7 \frac{\text{gal}}{\text{min}} = .003 \frac{m^3}{s} = 10.8 \frac{m^3}{hr}$$

$$D = 3 \text{ in} \text{ or } .0779 \text{ m}$$

	2) Number	Material	Type	Size
Valve	2	Steel	gate valve	3"
Elbow	1	Steel	90° elbow	3"

3) ON EXCEL

$$4) Q = 10.8 \frac{m^3}{hr}$$

$$h_a = 53.63 \text{ m}$$