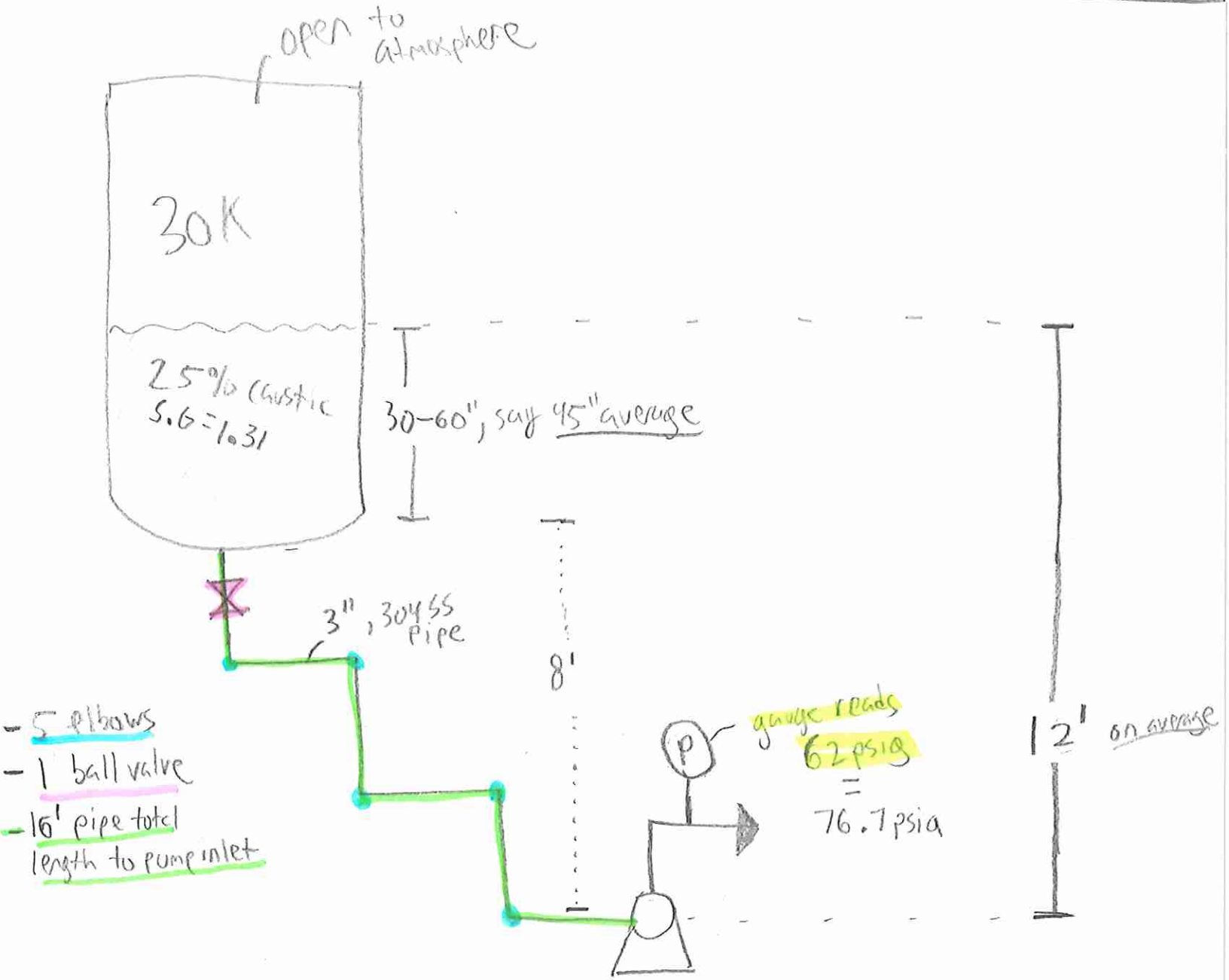
Suction head calc.



Total Dynamic Head = Discharge Head − Suction Head

= 76.7 psia − 16.74 psia = 59.96 psi or 138.34 ft head

Suction Head = h_{ss} (suction static head) + h_{sp} (suction pressure head) − h_{sf} (suction friction head) + h_{sv} (suction velocity head) → 0 (negligible)

Suction Head = $h_{ss} + h_{sp} - h_{sf} + h_{sv}$ (0)

h_{ss} = 12 ft on average = **5.2 psi**

$h_{sp} = \frac{P \times 2.31}{SG} = \frac{(0\ psig + 14.7\ psi) \times 2.31}{1.31}$ = **25.92 ft or 11.23 psi**

tank is atmospheric

h_{sf} = - assume $\frac{1\ psi\ \Delta P}{100\ ft}$ → 16' pipe = 0.1 psi pressure drop

- (5) 90° elbows = 0.18 ΔP
- (1) ball valve = 0.03 ΔP

$h_{sf} = 0.1 + 0.18 + 0.03$ = **0.31 psi or 0.71 ft head**

Suction head = $h_{ss} + h_{sp} - h_{sf}$ = 5.2 + 11.23 + 0.31 = 16.74 psi or 38.62 ft head

Total Dynamic Head = Discharge Head - Suction Head

= 76.7 psi − 16.74 psi = **59.96 psi or 138.34 ft head**