

**Problem 1** (Energy Equation)

In Fig. 1 there are 150ft of 2-in-dia pipe, 90ft of 6-in-dia pipe, and 180ft of 3-in-dia pipe, all wrought iron. There are two  $90^\circ$  elbows and fully open globe valve. If the exit elevation is zero, what power in horsepower is extracted by the turbine from the  $20^\circ\text{C}$  water when the flow rate is  $0.15\text{ft}^3/\text{s}$ ?

