# FPST 2483 Lab #06 Name:_____

**Part A**

Establish the nominal and actual internal diameter of the sample piping materials on display in the provided video and document. Turn this sheet in at the end of lab.

| PIPE | NOMINAL DIAMETER (INCHES) | ACTUAL INTERNAL DIAMETER (INCHES) |
|---|---|---|
| BLUE BRUTE: | | |
| PERMASTRAN: | | |
| ASBESTOS CEMENT: | | |
| CPVC: | | |
| POLYBUTYLENE: | | |
| CEMENT LINED CAST IRON: | | |
| UNLINED CAST IRON: | | |
| WOOD: | | |
| SCHEDULE 40: | | |
| SCHEDULE 10: | | |

**Part B**

**OBJECTIVES**

Respond as directed to the following questions and problems and submit at the end of lab:

Respond as directed to the following questions and problems.

1. On a hydrant where the coefficient of discharge is 0.90, find the flow for the following pitot gauge readings. Assume 2-1/2 inch hydrant outlets.

    a. 9 psi:

    b. 23 psi:

    c. 38 psi:

2. A 2-1/2 inch hydrant outlet is flowing 727 gpm and gives a pitot gauge reading of 31 psi. What is the coefficient of discharge?

3. A pitot pressure of 50 psi will indicate what flow through the following nozzles. Assume Cd = 0.99 for each.

    a. 1-inch:

    b. 1-1/2-inch:

    c. 2-inch:

4. What pitot pressure is required at each of the following nozzles to produce 100 gpm? Use Cd = 0.99 for each.

    a. 1-inch:

    b. 1-1/4-inch:

    c. 2-inch:

5. If you have a 1-1/2 inch nozzle with Cd = 0.90, what pitot gauge reading would indicate that 500 gpm are flowing?

6. Find the flow from the following nozzles at the following pitot gauge readings: (Cd = 0.90)

    a. 1-1/2 inch nozzle at 95 psi:

    b. 1-3/4 inch nozzle at 51 psi:

    c. 2-inch nozzle at 30 psi:

7. What is the equation to use to solve for friction loss using the Darcy Weisbach method?

8. What are some applications that a fire protection engineer can use the Darcy Weisbach method for?

9. What is the equation to use to solve for friction loss using the Hazen Williams method?

10. What is the most critical variable in the Hazen Williams formula and why?