



FLUIDS LABORATORY

College of Engineering

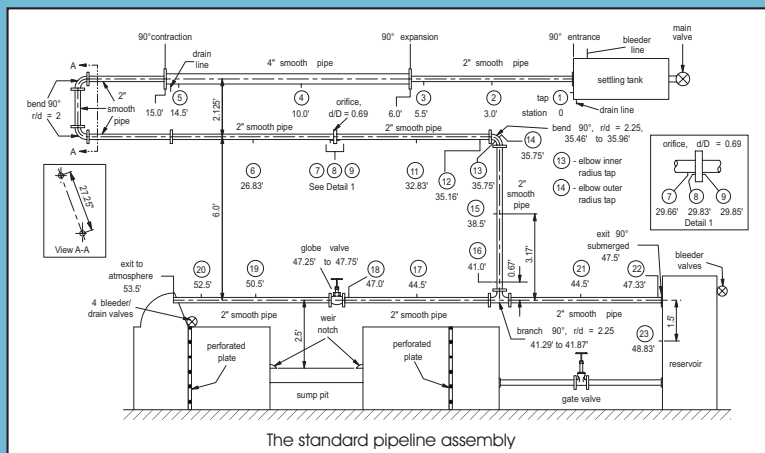
Energy and Hydraulic Grade Lines in Pipe Systems

Purpose

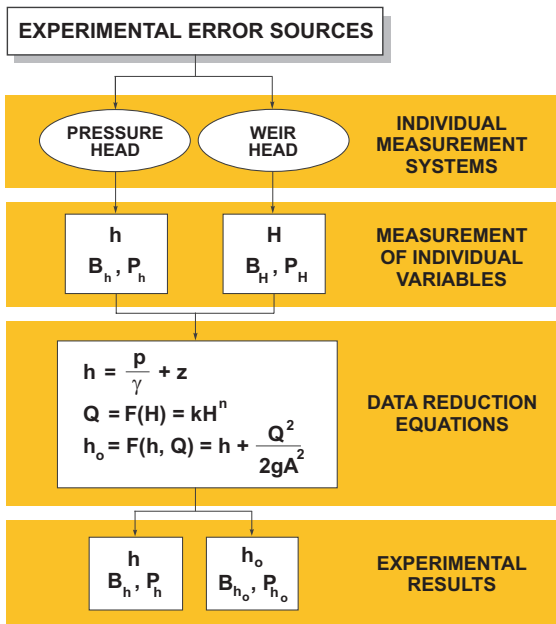
To determine the hydraulic and energy lines in a pipeline assembly comprising losses due to friction in the conduit as well as head losses due to transitions and fittings.

Test Design

The water pipe-flow assembly consists of two pipeline systems: one containing standard transitions and fittings (see figure), and a second one that has similar elements but with a streamlined configuration. A pump supplies water to the pipe assembly. Pressure taps are located throughout the system to allow measurement of the pressure-head. Pressure head measurements are taken with a simple mercury manometer. The system discharge is measured by a triangular weir.



Measurement Systems

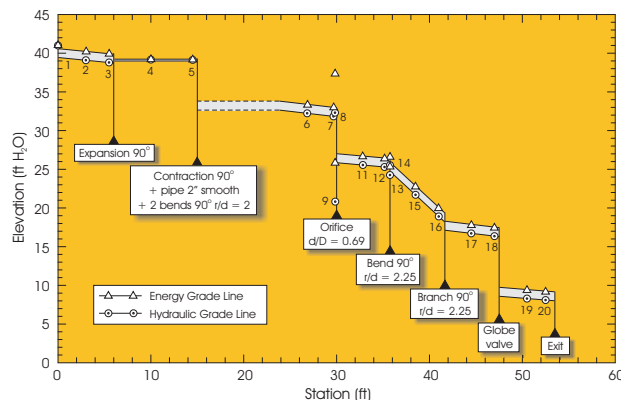


Block diagram of experiment

Data Analysis

- Compute velocity, piezometric, and energy heads at each pressure tap
- Plot the hydraulic and energy grade lines
- Discuss energy budget
- Discuss sources of experimental errors

Results



Energy and hydraulic grade lines for the standard pipe system.