

SYSTEMS MODEL

This document contains preliminary drawings of the systems model generated through the concept selection phase. These drawing will act as the basis for generating the future design (Figures 1 and 2).

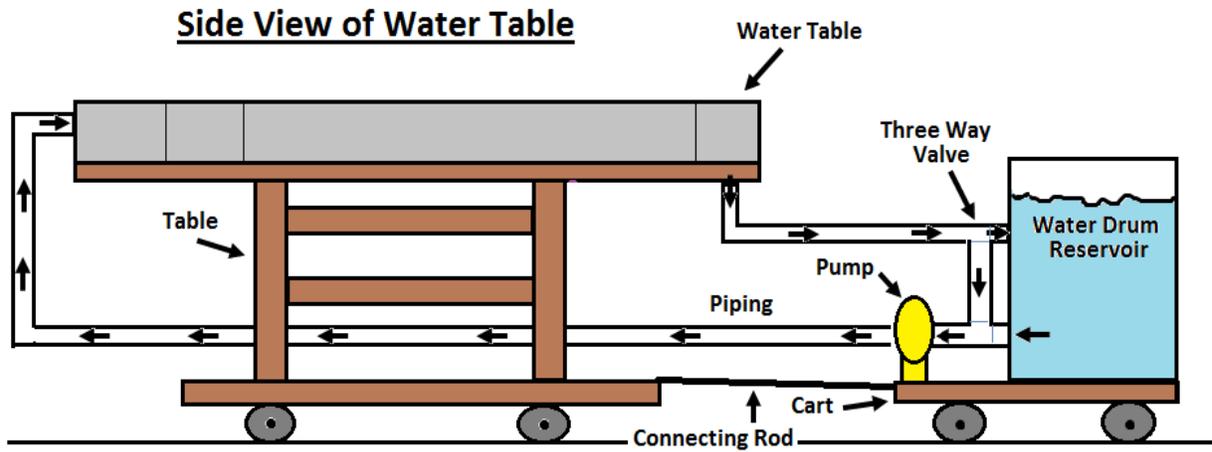


Figure 1. Side View of Water Table

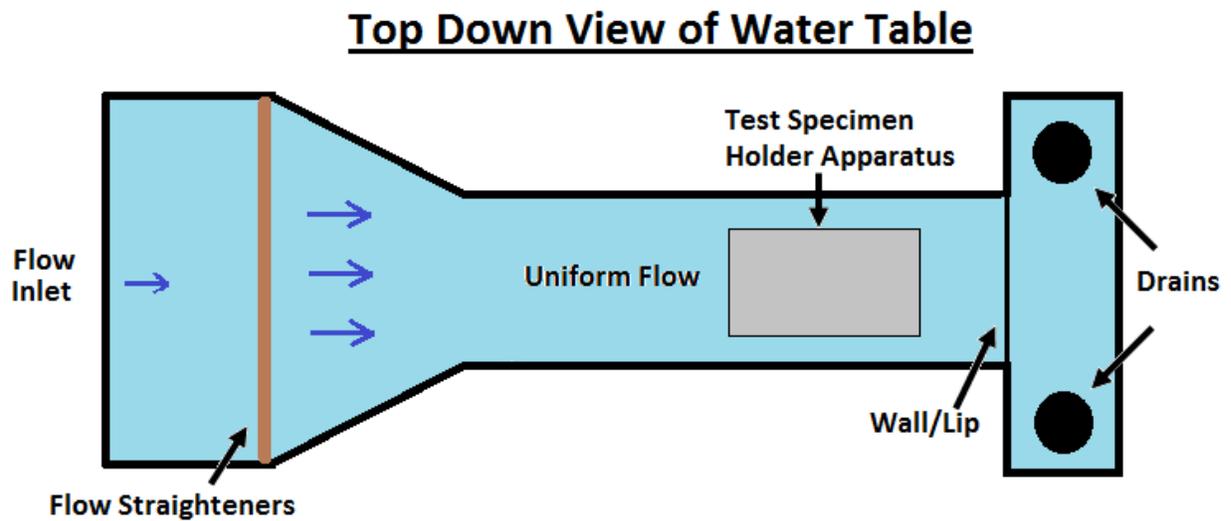


Figure 2. Top Down View of Water Table

Basic System Description:

The water table is expected to have a footprint of 33 inches wide by 65 inches long and a maximum height of 50 inches. A water drum filled with water on a separate cart will act as the reservoir for the water table. This water drum will interface with the water table system piping to provide water to the system. Two three-way valves located near the interface to the water drum reservoir in the system will help regulate flow. The system will be pumped to the desired water level and then cycled from there in a closed loop system via the use of the three-way valves. Water will be circulated through the system via a pump.

The flow rate will be regulated to control the rate at which water enters and leaves the reservoir to adjust flow rate in the water table appropriately. Water will be plumbed through piping to enter the water table through one entrance denoted in Figures 1 and 2 above. The water will be forced through a flow straightener and enter a nozzle region to get uniform flow through the testing section. There are to be two drains at the end of the testing section. The drains are set to the sides to avoid fluid affects in the test region from the vortices that will develop from the drains. As the water leaves the drain it will flow back through the system and be recycled.

The design will be adaptable for at least two flow visualizers. One choice for flow visualization will be through floating “beads” of different colors. The second flow visualizer will be performed via electrolysis (bubbles).

The mounting of the test specimen will be done through magnetic force. A ferrous plate will be place on the bottom of the reservoir as denoted in Figure 2. Magnets of a designed pull force will be fixed onto the bottom of the test specimens which will stick on the ferrous plate in a desired position and angle. The ferrous plate will also provide a better background for photography.