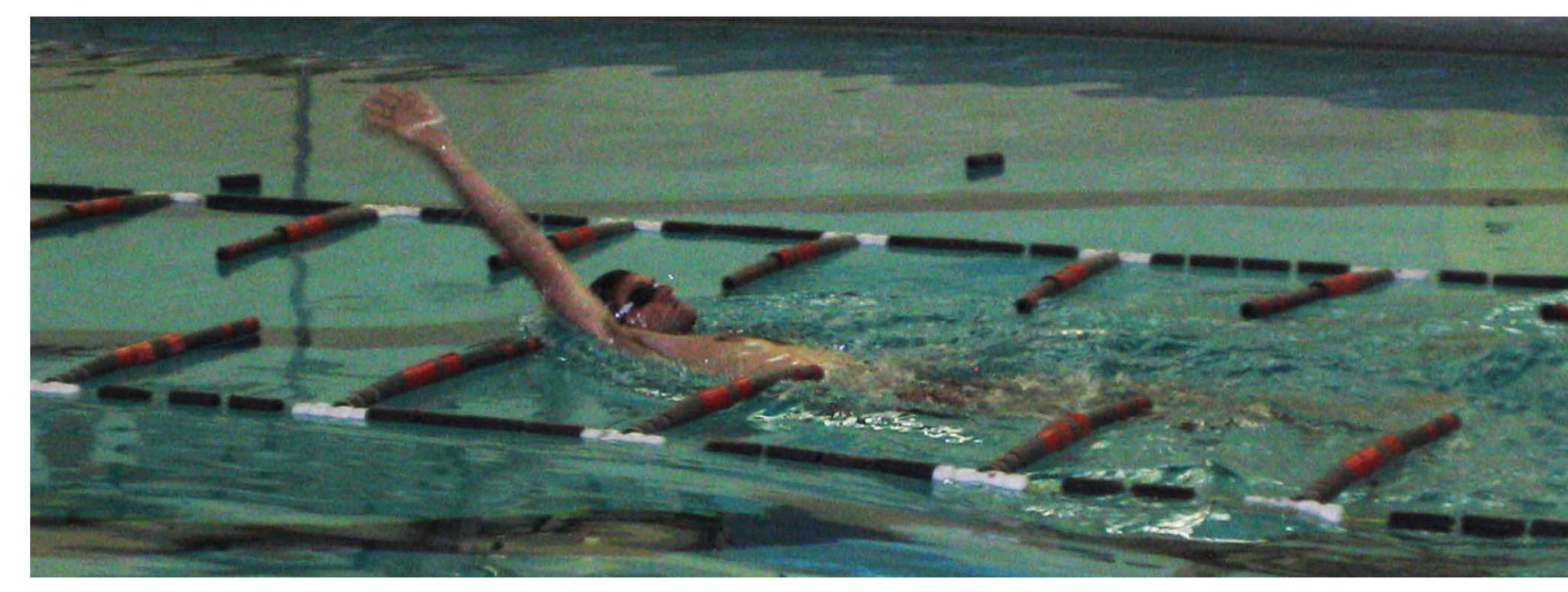


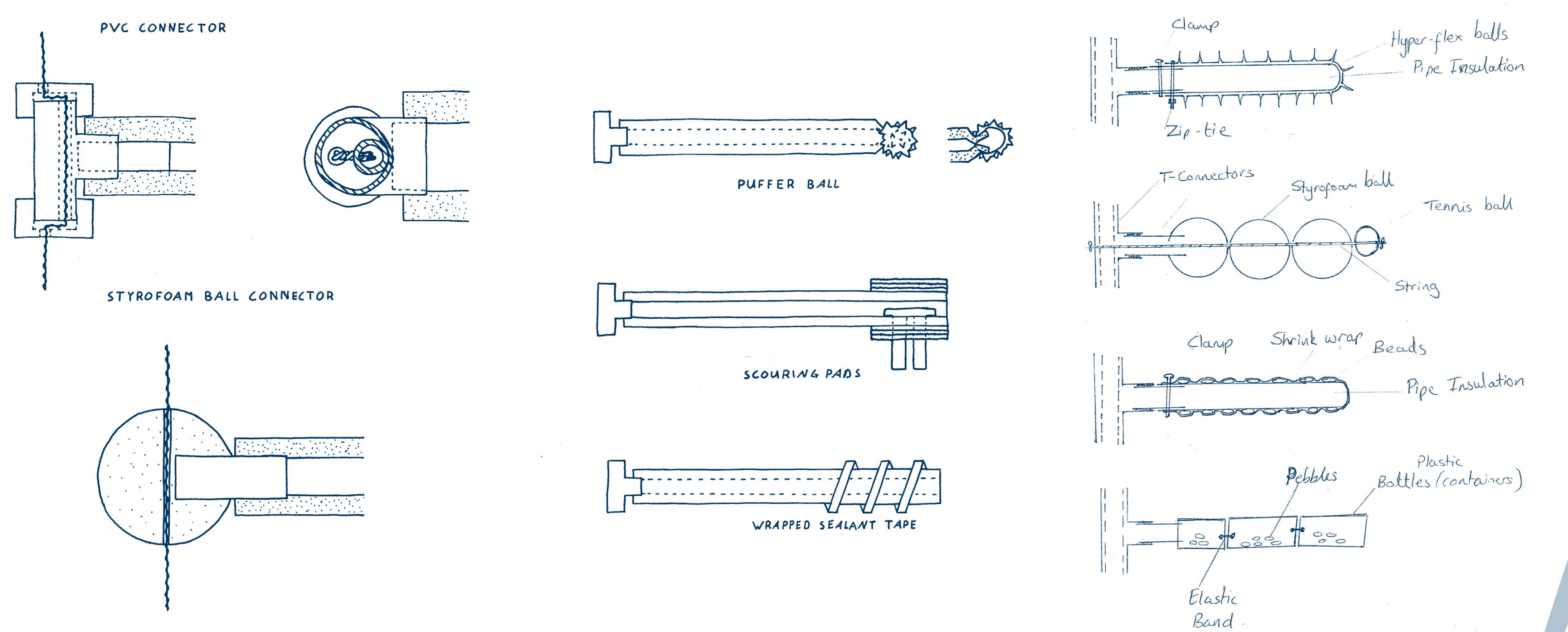
Provide safe, effective, and reliable assistive devices for visually impaired swimmers.

I PRO 310 - DESIGNING PROTOTYPES FOR ASSISTING BLIND SWIMMERS

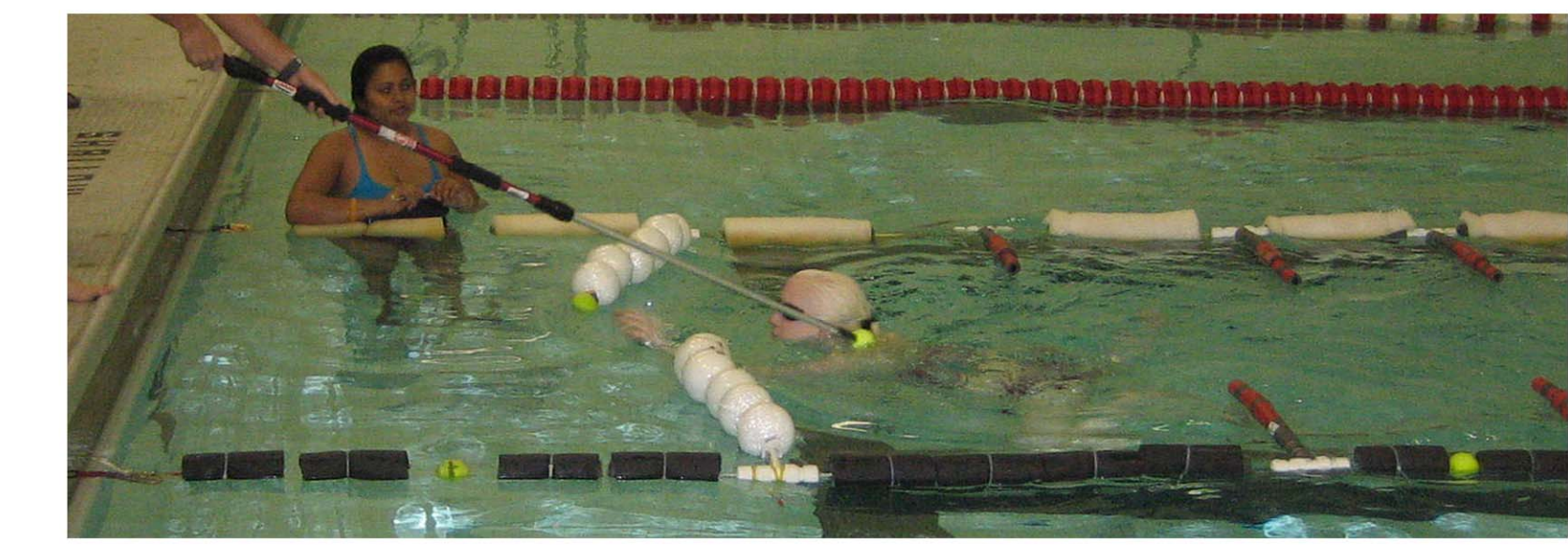
Passive Device



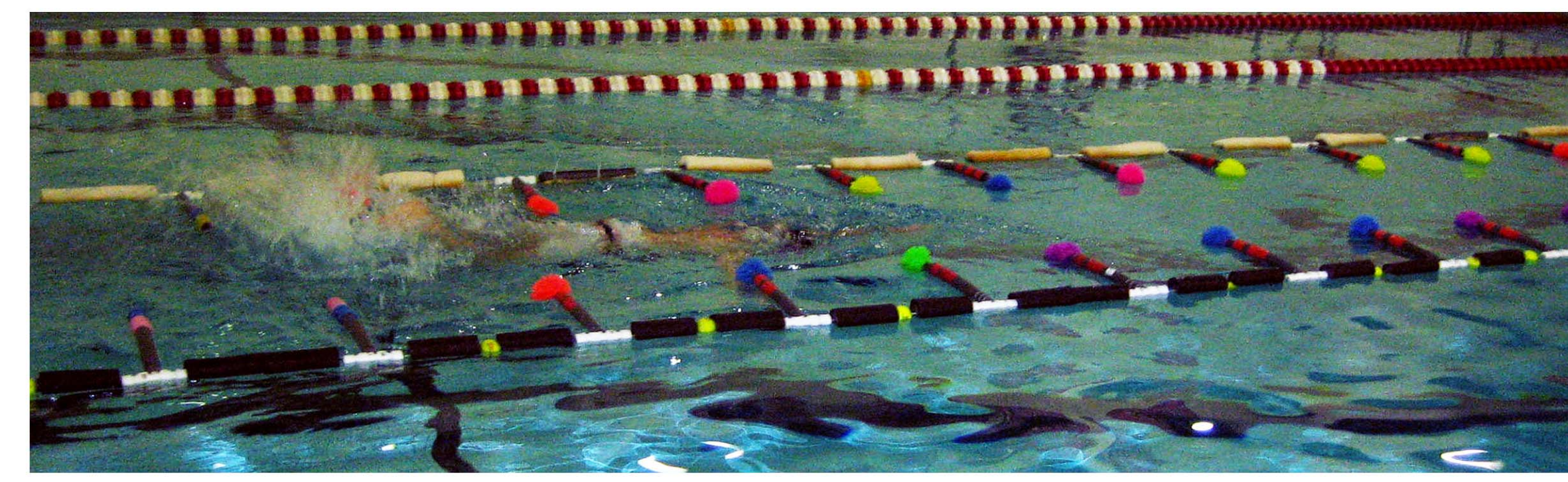
The device is a series of tappers placed in the pool to tactilely guide the swimmer through the lane. The device provides different sensations to allow the swimmer to locate distance from both the lane lines and the pool wall.



The team built on the device previously made by the summer 07 I PRO Team by designing and testing several variations of the different components of the device: lane line connector, lane tapper, and end of lane tapper.



We performed two tests during the semester with visually impaired swimmers. Those who tested the device have stated it made them feel safer in the pool.



There are ten million blind or visually impaired people in the U.S.

Many of them don't exercise at all, let alone swim, because they feel afraid.

They don't feel safe because they can't locate themselves in their surroundings.

For those that do participate in athletic events, the methods used to allow them to compete make them dependent on other people

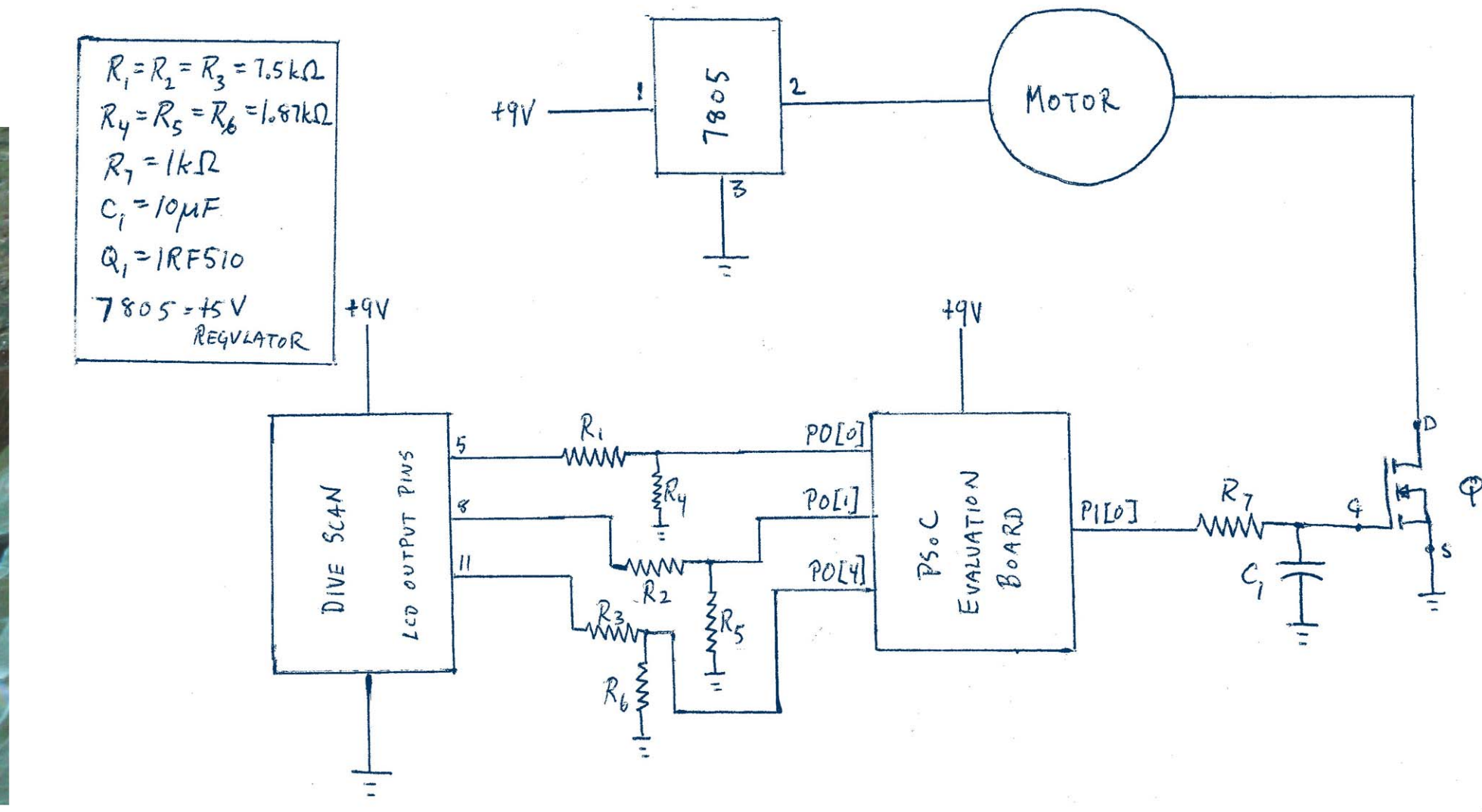
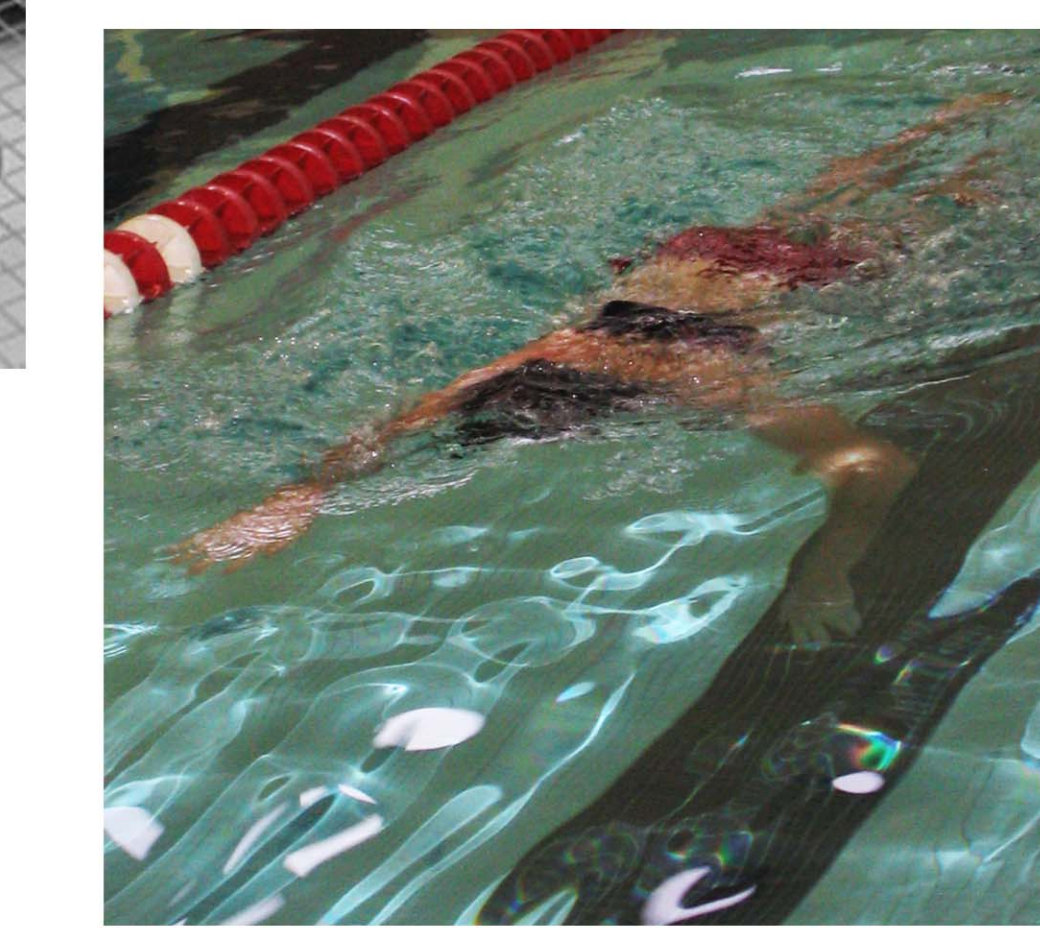
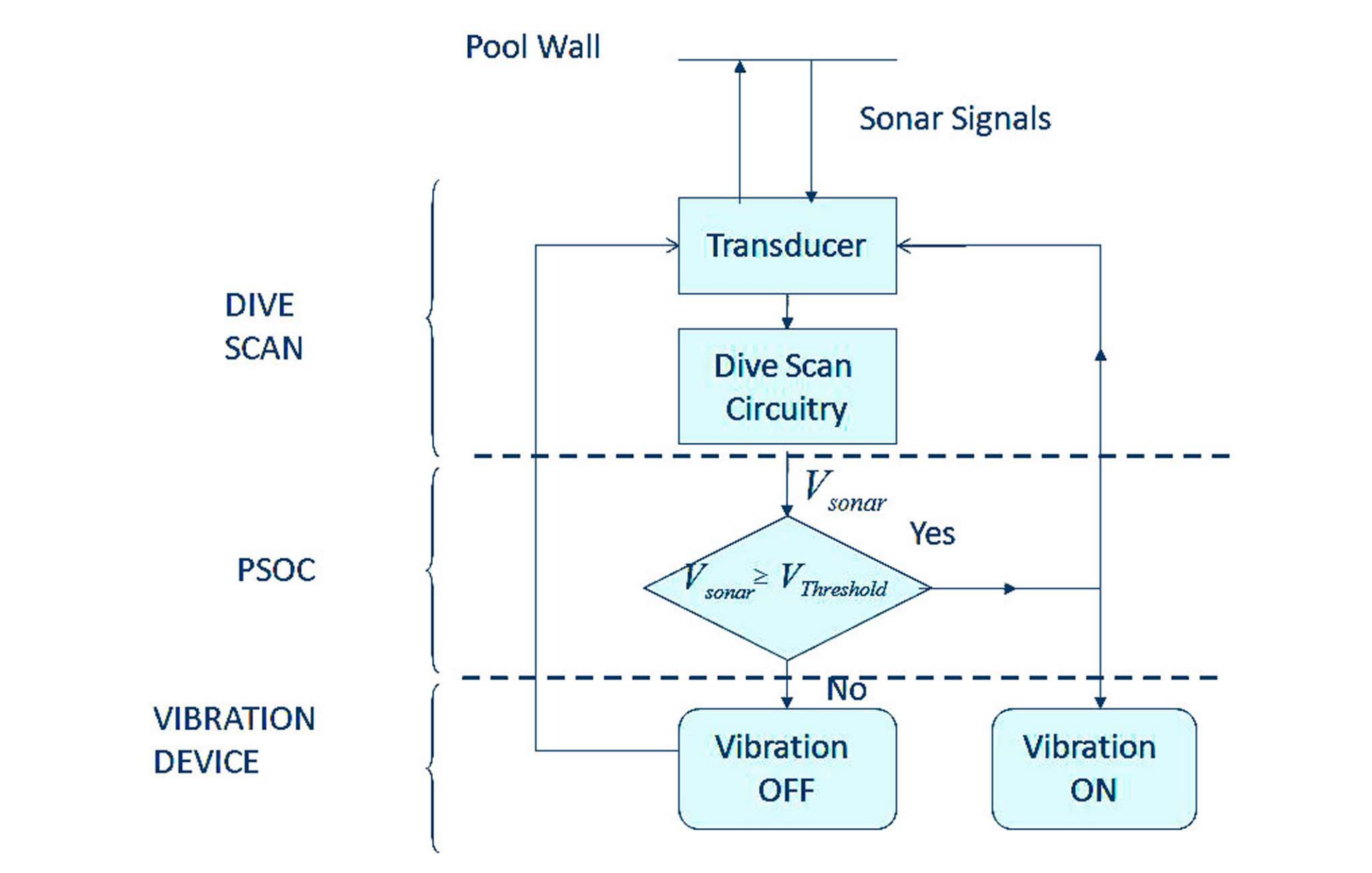
Would You Feel Safe in the Water if You Couldn't See?

Active Device



The Active device uses sonar technology to alert the blind swimmer of an upcoming obstacle by means of a vibration.

Our device incorporates two main systems: the circuitry from a Dive-Scan device that allows divers to measure distances to nearby objects underwater, and a Programmable System on Chip (PSoC), donated by Cypress Semiconductor, that allows us to change the visual feedback into a vibration output to the swimmer.



SCHEMATIC OF CIRCUIT TO TRIGGER VIBRATION WHEN A THRESHOLD LEVEL IS CROSSED



The team conducted several pool tests with the active device to determine how to best alert the swimmer: the positioning of the device, the type of vibration, and the distance from the end of the lane they are to be alerted.