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Rapidly Deployable Storm Surge Sensor

ME 4202: Capstone Design

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Louisiana Sea Grant

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Mission Statement

To quantify the properties of storm surge such that after research, new and more appropriate building codes can be attained.

Project Overview

- Measure the properties of storm surge
 - Velocity
 - Water Level
 - Temperature
 - Salinity
- Record data for 4 days

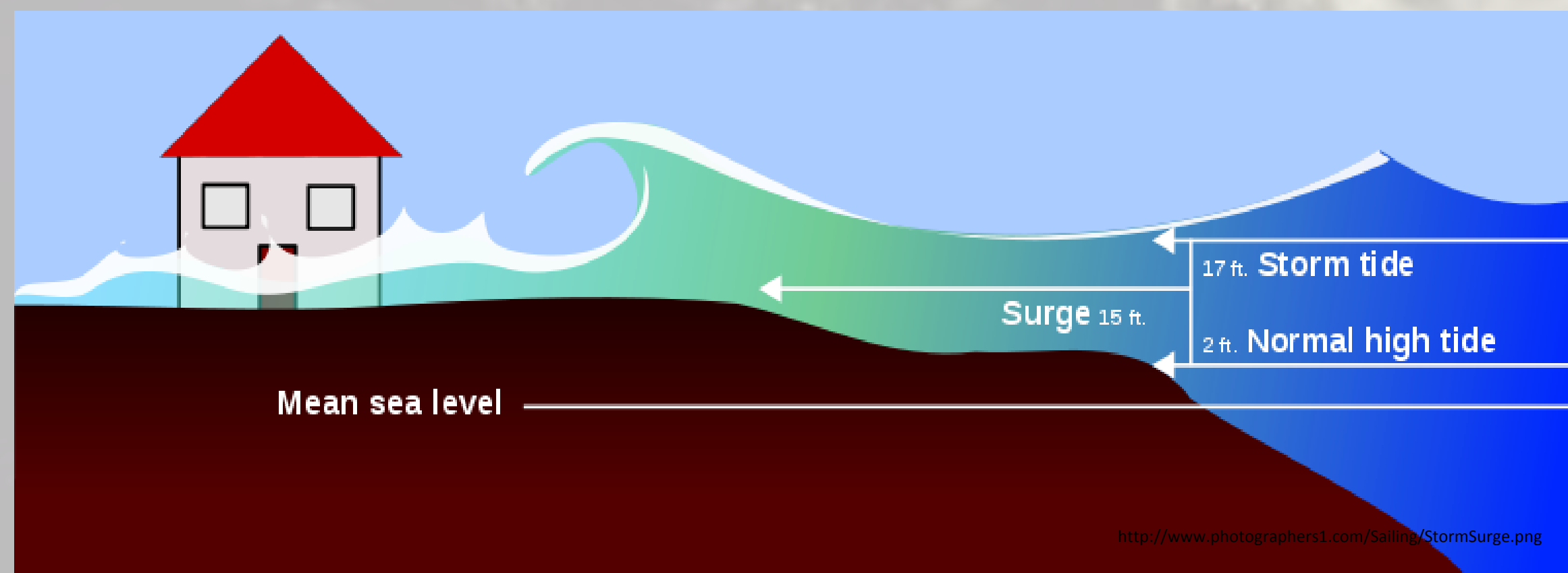


Figure 1 : Storm surge diagram

System Overview

- Upper Casing
 - Velocity
- Lower Casing
 - Temperature
 - Depth
 - Salinity

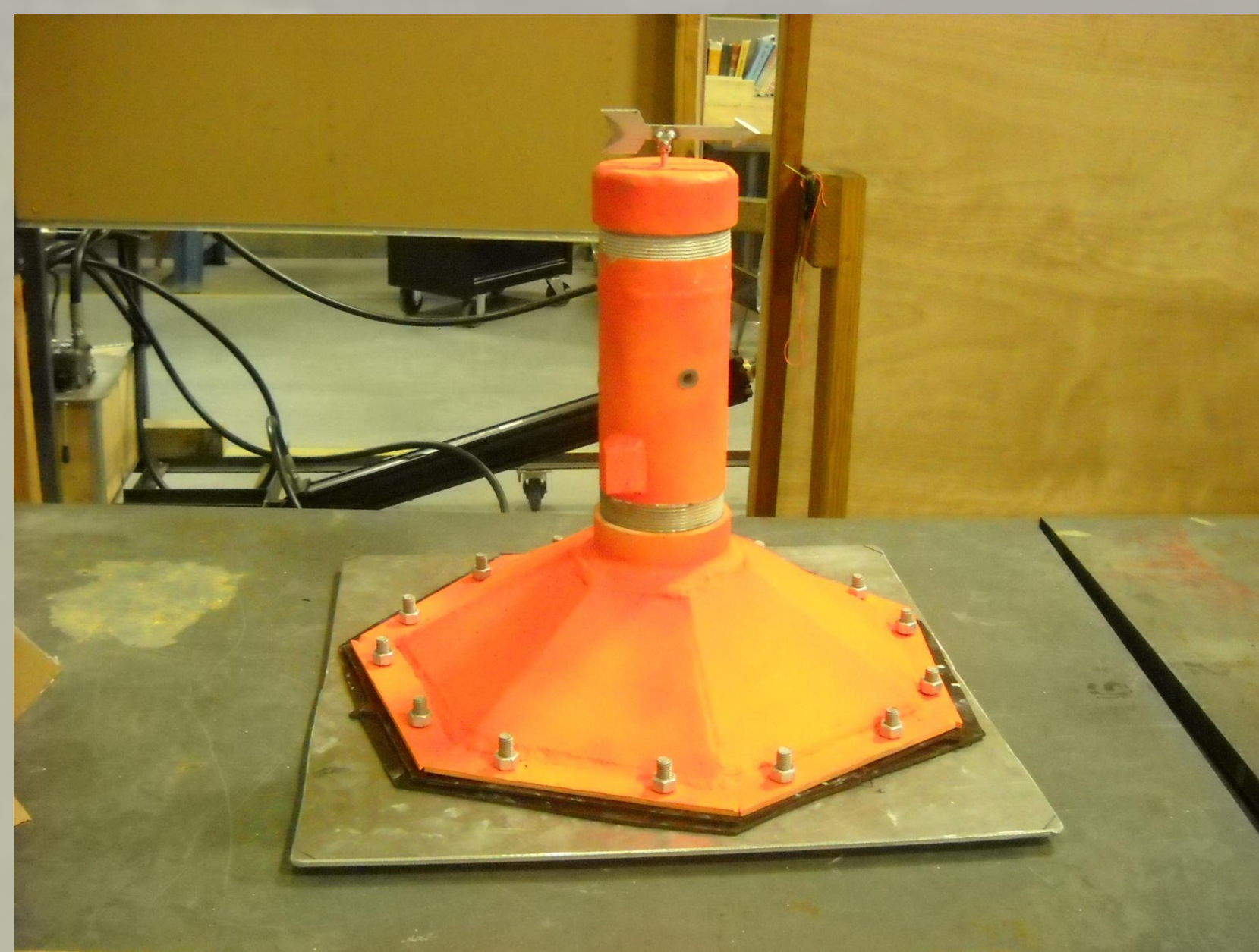


Figure 2: Complete System

Upper Casing

- Differential Pressure Transducers
- Rotary Encoder
- Vane



Figure 3: Upper Casing

Lower Casing

- Sensor Bank
- Circuit Board
- Power Supply

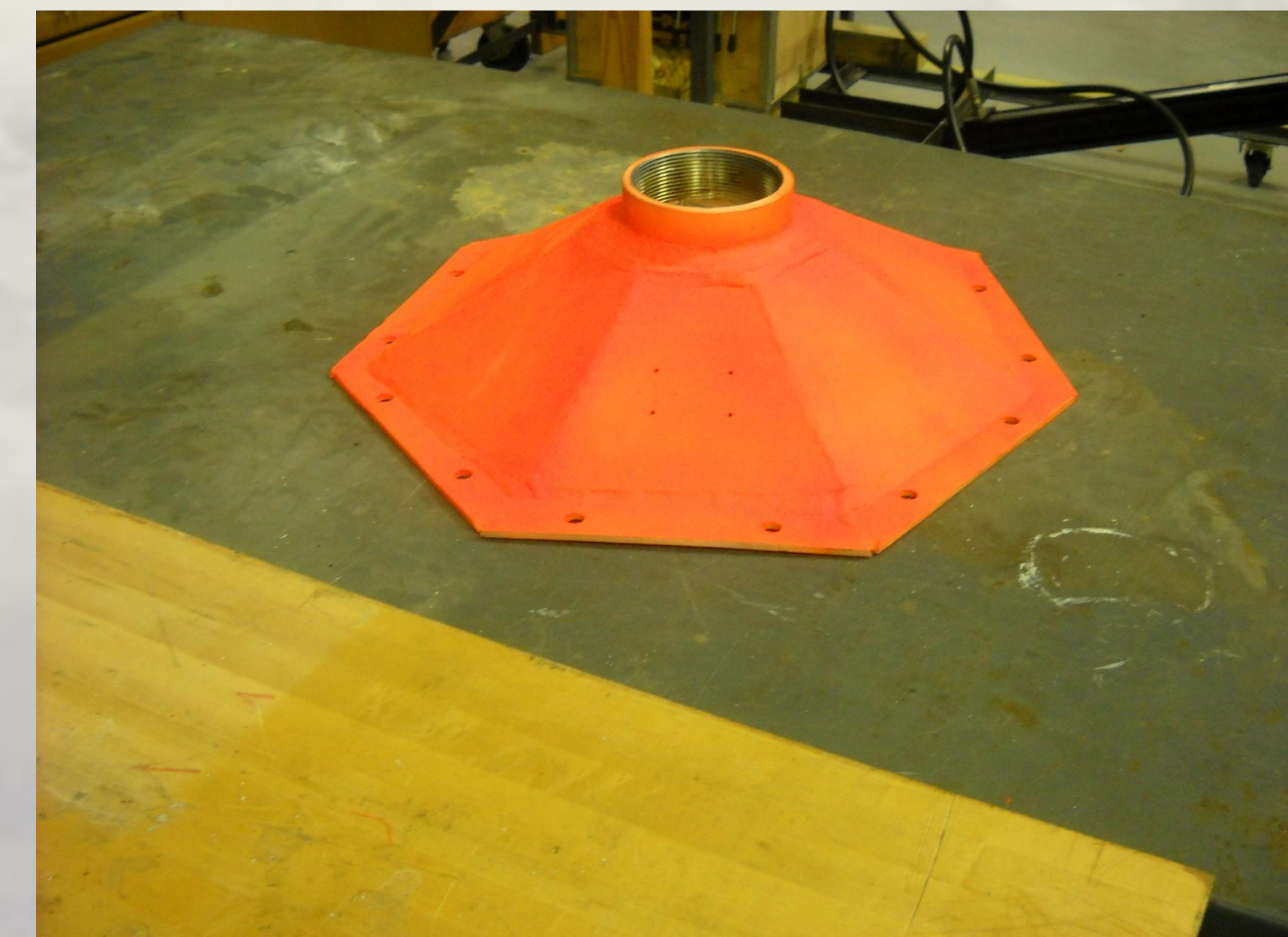


Figure 4 : Loser casing shell

Manufacturing

- Cut plates – plasma torch
- Welding
- Cut pipe coupling -band saw
- Threaded pipe – CNC Lathe
- Isolation Bushings - 3D printer

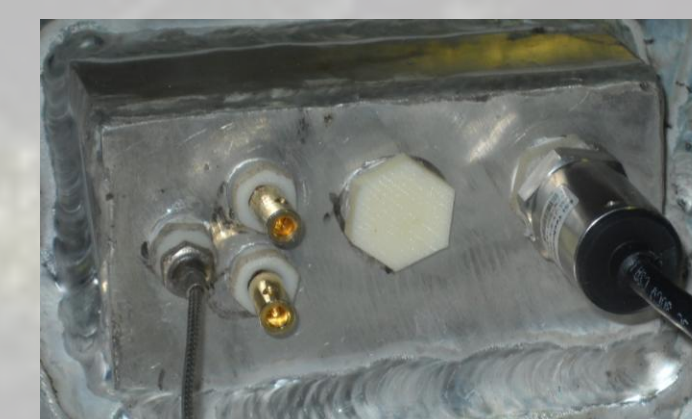


Figure 6: 3D printed threaded bushings



Figure 5: Welding pieces together

Testing

- Water flume
- PVC pipe filled with water
- Sealing test

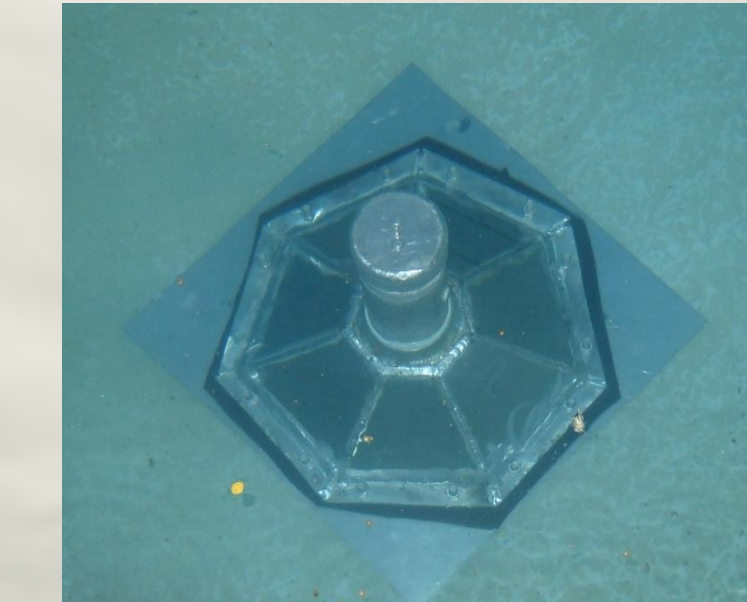


Figure 7: Sealing test

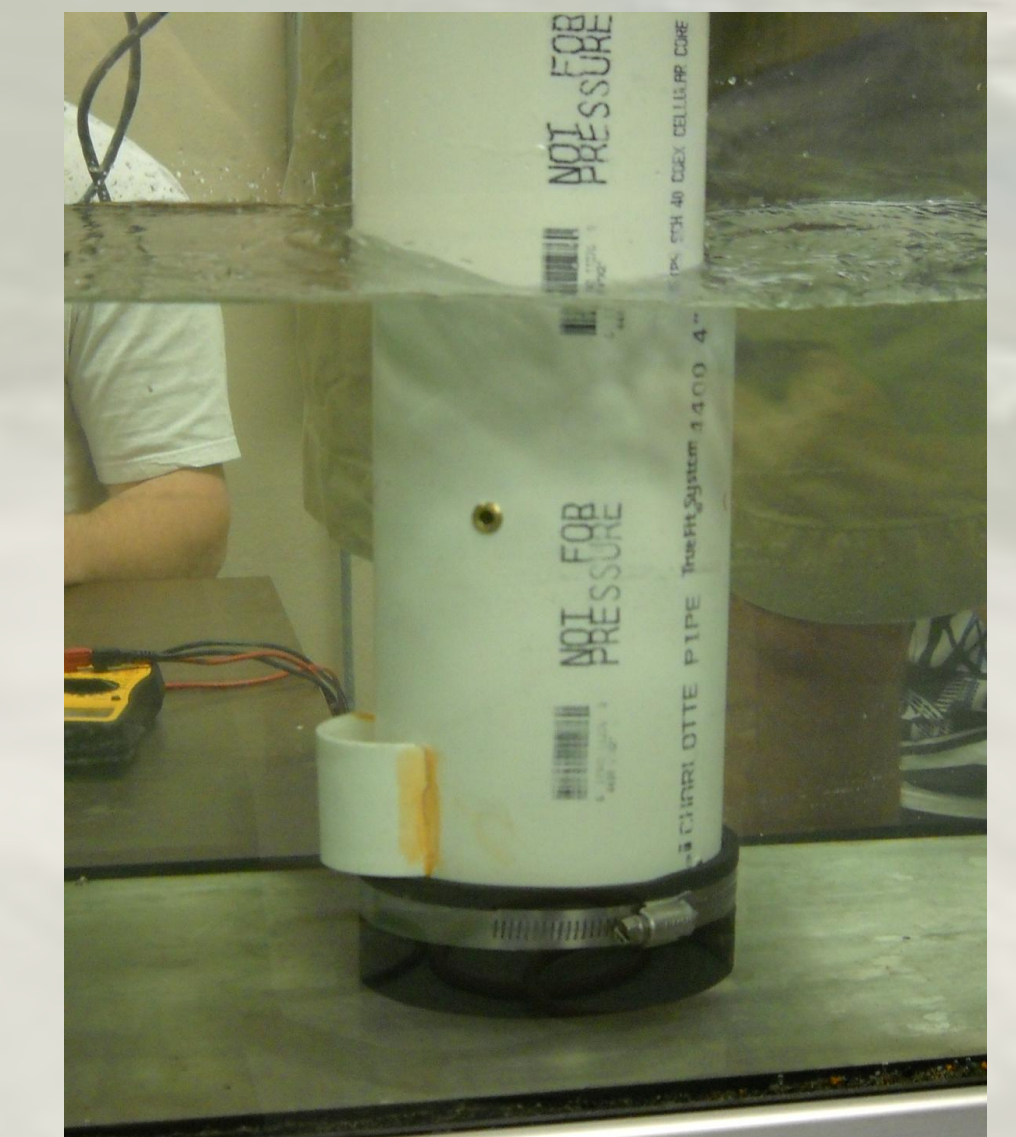


Figure 8: Velocity testing apparatus in water flume

Budget

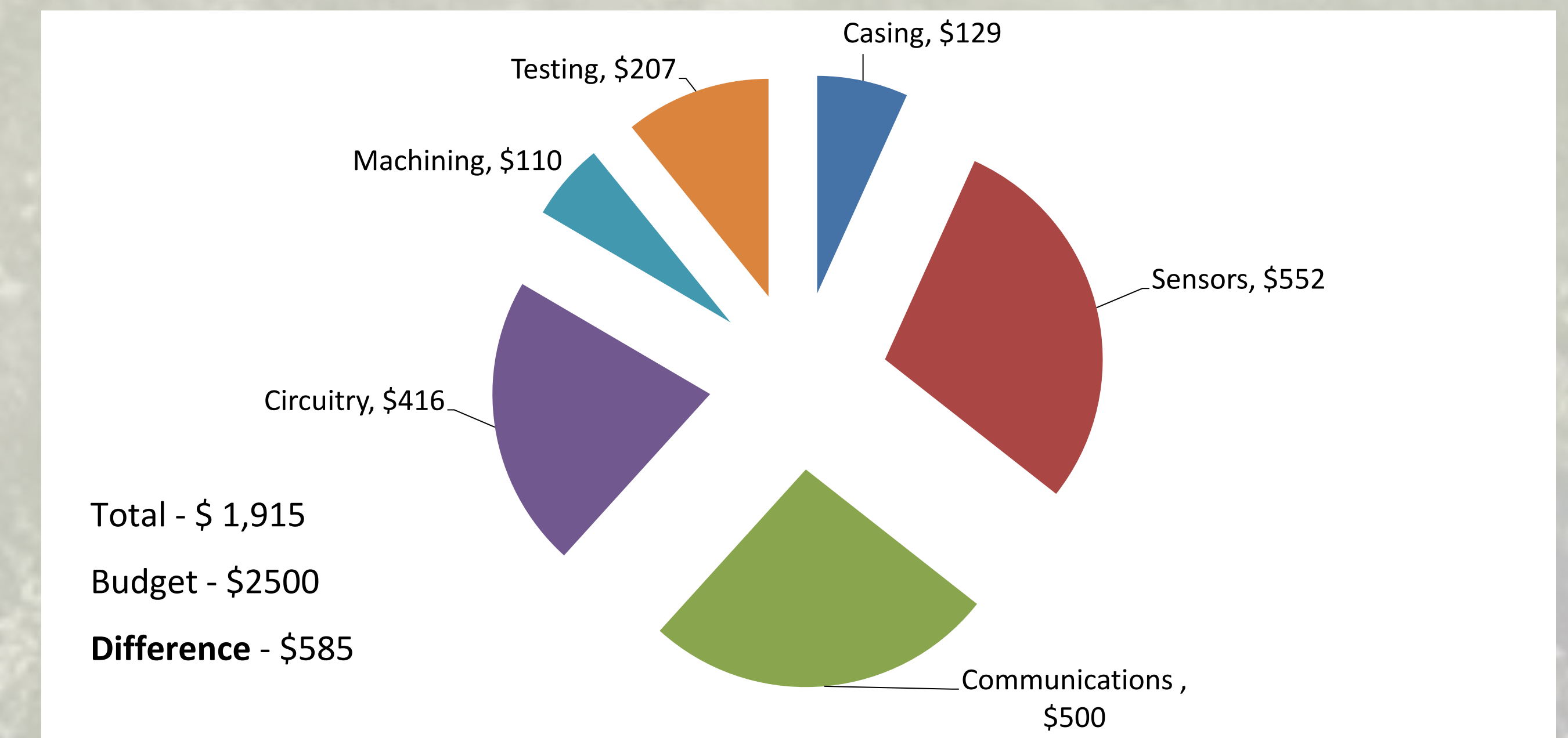


Figure 8: Budget Pie Chart

Conclusions

- Prototype
- Potential Flow Theory
- Corrosion Issues Solved
- Sealing Successful
- Records data for 4 days

