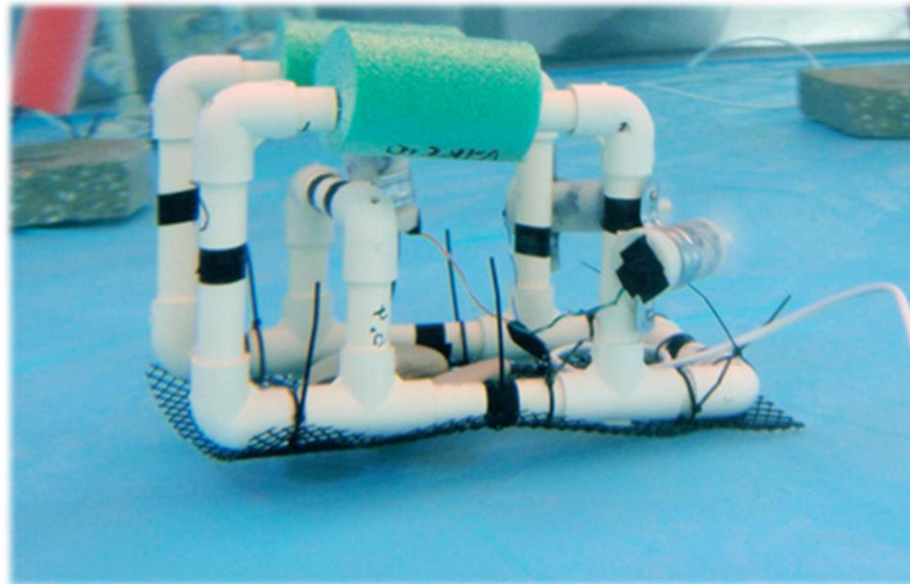


SeaPerch

Structural System



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Structural Technology

- Structural Technology is the engineering of putting mechanical parts and materials together to create supports, containers, shelters, connectors, and functional shapes.



What makes a structure?

- Supports a load
- Resists various forces
- Holds elements in a relative position to other parts



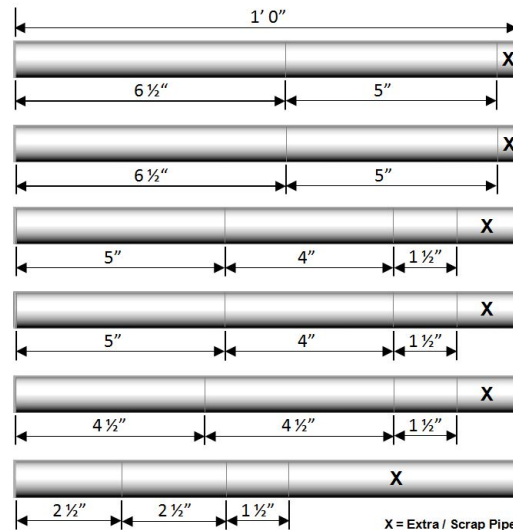
What happened?



Standard PVC Frame Parts

If building the standard SeaPerch ROV frame, refer to the latest “SeaPerch Construction Manual” which may be downloaded from <http://seaperch.org/build>

The construction manual provides detailed instructions for construction and assembly as well as procedural tips.



Procedure 1.2 – Drill the Drain Holes

NOTE: You will need to create vent and drain holes in the vehicle frame in order to allow water to fill the frame when you place your SeaPerch into the water and for the water to drain out when you remove it.

Construction Steps:

1. Place an elbow on the end of a 6"-to-12" length of 1/2" PVC pipe, to use the pipe as a handle while drilling, as in Figure 1.2-1, or secure it in a vise or clamp.
2. Drill from the *interior* of the elbow outward, to avoid slipping. Drill a 1/4" hole in the corner of the elbow, such as shown in Figures 1.2-1 and 1.2-2.
3. Repeat Steps 1 and 2 for other PVC elbows.
4. Drill thruster mounting holes in two of the 5" lengths and one of the 4 1/2" lengths as shown in Figure 1.2-3. Be sure to carefully center the thruster-mounting holes on that pipe so that the thrusters will be straight when mounted on the vehicle.



Figure 1.2-1: Drilling Elbow Hole over a Wastebasket



Figure 1.2-2: Drain Hole Drilled in a PVC Elbow

Modified Structural System

- If your team developed a modified structure, you will need to determine the length of each piece of PVC pipe.
- The pipe fits into the connector $\frac{3}{4}$ ".
- This means that you will need to add $1 \frac{1}{2}$ " to the length of the pipe if you have a connector on both ends.



Follow the steps in the construction manual to build the propulsion assemblies and to mount them on the frame.



Construction Steps:

1. Thread a large, heavy-duty tie wrap through the two thruster-mounting holes at each of the three thruster locations, as shown in Figure 2.6-4.
2. Place the appropriate thruster in the loop formed by each tie wrap, and tighten the tie wrap around the thruster, as shown in Figure 2.6-5. Refer to Table 2.6-1 for thruster placement. Be sure to mount the vertical thruster with its propeller pointing upward, as shown in Figure 2.6-7.

Table 2.6-1 – Thrusters Identification for Placement on the Vehicle Frame	
Green / Green Striped	Starboard (Right)
Blue / Blue Striped	Port (Left)
Orange / Orange Striped	Vertical (up and Down)

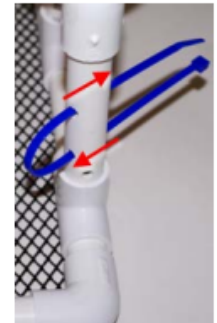


Figure 2.6-4: Tie Wrap Threaded Through Thruster-Mounting Holes