COSEE TEK ~ University of Connecticut
Basic Observation Buoy (Single Float Design with Settlement Tray Experiment)

Material List and Fabrication Instructions
Version 1.0 (8-15-2011)
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Recommended Tools:

1. Miter saw or band saw
2. Hacksaw w/bi-metal blade
3. Drill with ¼”, 3/8”, ¾”, & countersink or tapered drill bits
4. Two 9/16” open ended wrenches or adjustable crescent wrenches
5. Tape measure or yard stick
6. Sandpaper (120 grit recommended)
7. Fine-point permanent marker
8. Metric ruler

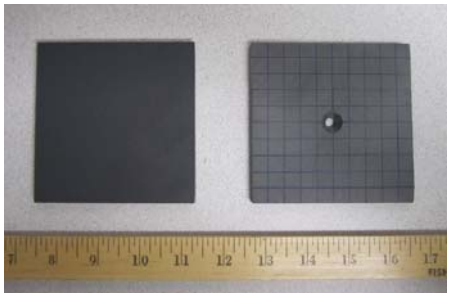
Material & Component Preparation:

1. Stainless Steel Eye:
   I. Using the hacksaw, cut through the cylindrical body of the stainless steel snap hook, separating the eye from the rest of the snap hook assembly. Note: the eye is the only portion of the snap hook assembly required for fabrication of the Basic Observation Buoy. The remaining portion of the snap hook assembly may be discarded or used for another purpose.

2. PVC Pipe Section for Float-to-Experiment Standoff:
   I. Using the miter saw or band saw, cut one section of PVC pipe to 6-3/4” inches in length.
3. PVC Pipe Sections for Settlement Tray Experiment:
   I. Using the miter saw or band saw cut two sections of PVC pipe, each to 24” in length.
   II. Measure and mark each 24” section of PVC pipe at 3”, 8”, 12”, 16” & 21” from one end. Be sure that all marks are in line and centered down the length of the PVC pipe.

   III. Drill four ¼” holes through each of the 24” PVC pipe sections at the 3”, 8”, 16” and 21” marks.
   IV. Drill one 3/8” hole through each of the 24” PVC pipe sections at the 12” mark.
   V. Drill one ¾” hole through one side of only one 24” PVC pipe section at the 12” mark.

4. Settlement Trays:
   I. Using the miter saw or band saw, cut the gray PVC rectangular bar to as many 10cm long pieces as possible. Depending on blade thickness, you should end up with 11 or 12 equal pieces. Only eight 10cm x 10cm x ¼" pieces are required for the settlement tray experiment, however, 12 pieces allows for the four weekly or bi-weekly sampling trays to be replaced in the field and returned to the laboratory for closer examination.



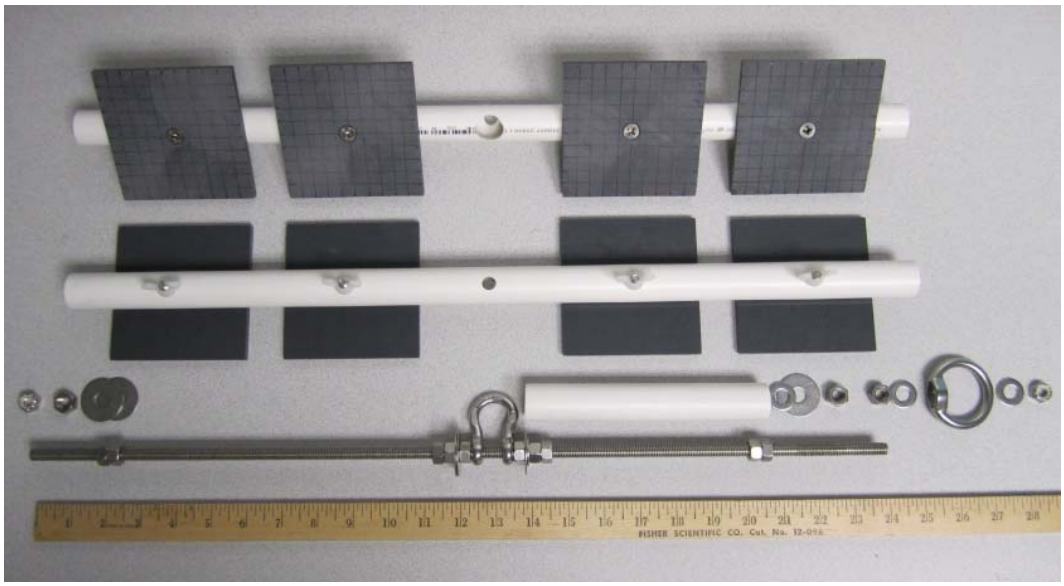
   II. Mark the center of each 10cm x 10cm x 1/4" PVC piece and drill a ¼" center hole.
   III. Using a countersink or tapered bit, drill one side of each 10cm x 10cm x 1/4" PVC piece to the depth necessary to accommodate the head of the SS machine screws.
   IV. Sand the surface of each 10cm x 10cm x ¼" PVC piece (tapered hole side only), to rough the surface only.
   V. Using the metric rule and fine point permanent marker, draw a grid of 1cm x 1cm cells across the rough surface of each 10cm x 10cm x ¼" PVC piece.

Assembly:

1. In order to provide a visual guide for the following instructions, mark one end of the 3/8"-16 x 24" threaded rod as #1 and the other end as #2.
2. Beginning from end #1 of the threaded rod (left side of figure below), install two 3/8"-16 hex nuts and tighten them together so that the outside of the furthest nut is 12" from end #1.
3. Beginning from end #2 of the threaded rod, install two 1-1/4" outer dimension (OD) flat washers followed by one 3/8"-16 hex nut and tighten the nut against the two 3/8"-16 hex nuts installed in the previous step, centering and sandwiching the two 1-1/4" OD washers between.
4. Holding the threaded rod with end #1 up, lower the trawlnet float over the threaded rod until it rests on the two 1-1/4" OD flat washers installed in the previous step.
5. Beginning from end #1 of the threaded rod, install two 3/8"-16 hex nuts approximately 2-1/2" from the end, followed by one 1-1/4" OD flat washer until the washer rests against the top opening of the trawlnet float. Adjust the hex nut nearest end #1 of the threaded rod until it is nearly touching the underside of the 1-1/4" OD flat washer resting on the trawlnet float (allow approximately 1/32" spacing between). You will be required to lift the washer off the trawlnet float to access and position the hex nut below. Once the hex nut is in place, remove the 1-1/4" OD flat washer and

trawlnet float and tighten the two 3/8”-16 hex nuts together retaining the positioning of the nut closest to end #1 of the threaded rod. (Installing and securing the trawlnet float at a later time will make it easier to proceed with the rest of the assembly.)

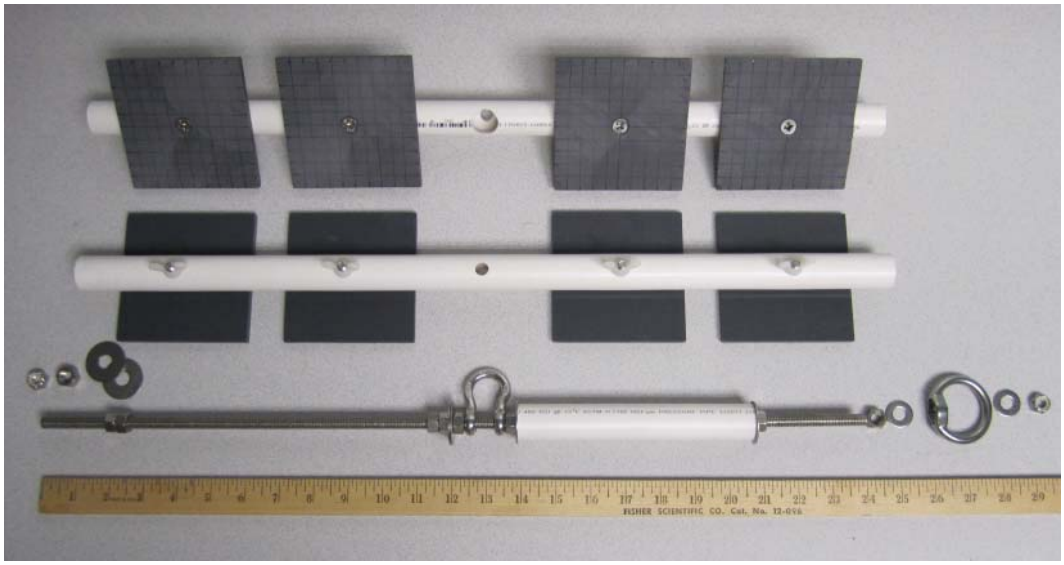
6. Remove the pin from the SS anchor shackle and insert the shackle over end #2 of the threaded rod against the 3/8”-16 hex nut installed in step 3.
7. Beginning from end #2 of the threaded rod, install one 3/8”-16 hex nut, one 1-1/4” OD flat washer, one 13/16“OD flat washer, and two additional 3/8”-16 hex nuts until they just touch the SS anchor shackle. Allowing just enough room for the SS anchor shackle to spin freely, tighten all nuts together, sandwiching the two washers between. It is recommended that the two immediately adjacent 3/8”-16 hex nuts be tightened together before centering the washers and securing the single 3/8”-16 hex nut adjacent to the SS anchor shackle. Centering the washers will ensure that the PVC standoff is centered on the complete assembly.
8. Using the 6-3/4” PVC standoff as a guide, and holding it against the 1-1/4” OD flat washer nearest end #2 of the threaded rod, install two 3/8”-16 hex nuts until both nuts are just inside the nearest end of the PVC standoff. Tighten the two 3/8”-16 hex nuts together so that the distance between the nut nearest end #2 of the threaded rod and the end of the PVC standoff is equal to the thickness of one 13/16” OD flat washer.



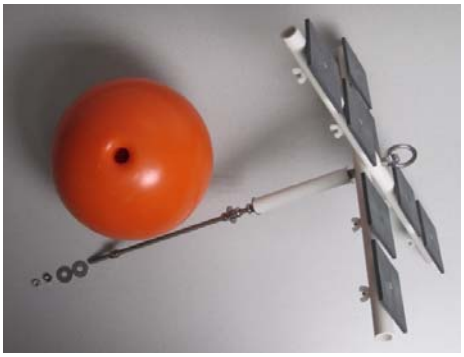
9. Insert the 6-3/4” PVC standoff over end #2 of the threaded rod until it presses firmly against the 1-1/4” OD flat washer added in step 7. The PVC standoff should fit tightly over the 13/16” OD flat washer also added in step 7.
10. Beginning from end #2 of the threaded rod, insert one 13/16” OD flat washer, one 1-1/4” OD flat washer, and install one 3/8”-16 hex nut. The 13/16” OD flat washer should fit snuggly within the end of the PVC

standoff against the two 3/8”-16 hex nuts added in step 8. Holding the 3/8”-16 hex nut adjacent to the SS anchor shackle, tighten the 3/8”-16 hex nut securely against the two 3/8”-16 hex nuts added in step 8 centering and sandwiching the two washers between.

11. Beginning with the 24” PVC section having the ¾” hole, install four settlement trays to the PVC section using one ¼”-20 x 1-3/4” machine screw and one nylon wing nut for each settlement tray installed. Be sure to install the trays against the side of the 24” PVC section with the ¾” hole. Install the four remaining settlement trays to the remaining 24” PVC section in a similar fashion.



12. Beginning with the 24” PVC section having the ¾” hole, slide end #2 of the threaded rod through the center hole of the PVC section ensuring that the ¾” hole and settlement trays are facing end #2 of the threaded rod. Install the second 24” PVC section in a similar fashion perpendicular to the first section added.
13. Beginning from end #2 of the threaded rod, install and tighten one 3/8”-16 hex nut, securely compressing the two 24” PVC sections together and against the bottom hex nut securing the PVC standoff.
14. Beginning from end #2 of the threaded rod, insert one 13/16” OD flat washer, followed by the SS eye, one additional 13/16” OD flat washer and one 3/8”-16 thin nylon locknut, securely fastening the SS eye to the #2 endmost portion of the 3/8”-16 threaded rod.



15. Holding the threaded rod with end #1 up, lower the trawlnet float over the threaded rod until it rests on the two 1-1/4” OD flat washers installed in step 3.
16. Beginning from end #1 of the threaded rod, insert two 1-1/4” OD flat washers and install one 3/8”-16 hex nut, securing the nut tightly in place and compressing the two 1-1/4” OD flat washers against the topmost portion of the trawlnet float.
17. Install one 3/8”-16 nylon insert thin hex locknut onto end #1 of the threaded rod.

Congratulations, the fabrication and assembly of the COSEE TEK Basic Observation Buoy (single float design with settlement tray experiment) is now complete and ready for testing and deployment in the field.

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