

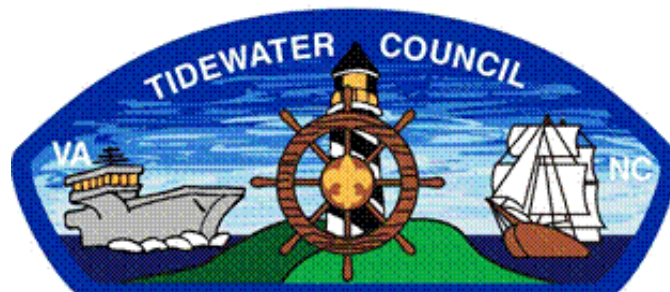
2013 Cardboard Boat Float



LEADERS GUIDE

June 7-9, 2013

Pipsico Scout Reservation
57 Pipsico Road
Spring Grove, VA 23881



2013 Cardboard Boat Float

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2013 Cardboard Boat Float

Boat Float Information

When June 7-9, 2013 (Friday – Sunday)

Be Prepared. There is no rain/snow date for this event. All units should prepare for foul weather.

What An AWESOME and Fun opportunity for participants to strive and meet the challenges. Use team building to design and build a powered boat, human or otherwise, made of corrugated cardboard which is capable of completing three trips around a course that is approximately a total of 200 yards long.

Where Pipsico Scout Reservation

57 Pipsico Road
Spring Grove, VA 23881

Contact Evan Sommerfeld
Camp Director
757-497-2688 ext. 212
Email: esommerf@bsamail.org

Wes Parker
Vice President- Camping Operations
757-635-2696
Email: wparker@pipsicobsa.com

Register Tidewater Council Service Center
1032 Heatherwood Drive
Virginia Beach, VA 23455

Cost \$10 per Scout, \$10 per adult If paid in full by May 25, 2013

\$15 per Scout, \$15 per adult If paid in full after May 25, 2013

NO "BOAT REGISTRATIONS" (IE Units Entering a Boat in the Event) WILL BE ACCEPTED AFTER JUNE 1, 2013

THERE WILL BE NO ON-SITE REGISTRATION. ALL PARTICIPANTS ARE TO REGISTER THRU THE TIDEWATER COUNCIL SERVICE CENTER.

Refunds Units must notify the Scout Office before the event begins if a Scout will not be attending. Refunds of pre-paid Boat Float fees will be made by check from the Scout Service Center following the event only in the case of documented illness or family emergency. No refunds for partial attendance will be granted.
NO REFUND REQUESTS WILL BE HONORED AFTER 5/25/13.

2013 Cardboard Boat Float

Introduction

The Tidewater Council, Boy Scouts of America welcomes you to the Cardboard Boat Float 2013 at Pipsico Scout Reservation (PSR). This event will provide a great opportunity for Scouts to hone their creative problem solving and teamwork skills while having lots of fun in the process. Recently resurrected after almost 4 years, the NEW Cardboard Boat Float hopes to draw on the enthusiasm from years past. Hosted again at Pipsico Scout Reservation, a Nationally Accredited Camping Facility, the event will take place along the shore of the James River, not in Lake Beasley as in the past. Special permission has been granted for Boy Scout, Venture Scout and Cub Scout units to participate in this event on the James River.

Participants will strive to meet the challenge - using team building - to design and build a powered boat, human or otherwise, made of corrugated cardboard which is capable of completing three trips around a course that is approximately 200 yards long.

During this event, we follow and enforce all of the policies, rules and regulations of the Boy Scouts of America and the Tidewater Council.

For updates please refer to the Pipsico website at <http://PipsicoBSA.com> click on the "Special Events" link at the top of the page.

Attendance Requirements

All campers/ participants must be a registered member of the Boy Scouts of America and every unit must have one registered adult aged 21+. However guests are welcome to view the race on Saturday. Guest information must be provided with unit registration or during check-in on Friday night.

RULES AND REGULATIONS

General

There shall be three divisions of boats, each divided into three categories. These divisions are:

Division I: Cubs/Webelos

Division II: Scouts (age11-17)

Division III: Venturing/ Sea Scouting & Exploring

Division I and II boats must be propelled by canoes paddles, kayak oars, or team made oars from the same materials as their boats. These, as well as decorations, may be constructed from materials other than cardboard. All other parts of the boat, including the hull, decking, cowling, superstructure, oar locks, seating and rudder, must be corrugated cardboard. Nuts, bolts, washers and staples are not permitted.

Division III boats must meet the requirements of boats of the other two Divisions with the exception of the propulsion and steering systems. These, including propellers, paddlewheels, sails and rudders, do not need to be made of cardboard but materials used must not contribute significantly to the structural rigidity of the boat. Propulsion and steering must be designed and fabricated by the entrant. In addition, the connections between the propulsion and steering systems must be made of corrugated cardboard. Nuts, bolts, washers and staples are not permitted.

The three categories for each division are determined by the crew size for the boat as follows:

- Guppy – 2 crewmembers
- Whale – 6 to 7 crewmembers
- Dolphin – 3 to 4 crewmembers
- Luxury Liner – 7+? crewmembers

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Construction

1. **Max individual sheet** cardboard thickness for **Guppy and Dolphin Class** is .5 inches. **Any thickness** of corrugated cardboard is permitted for **Whale and Luxury Liner Classes**. For ALL CLASSES waxed cardboard, carpet tubes and barrels are not allowed. Cardboard can be layered to create additional thickness to the vessel.
2. While tape may be used on seams, joint and patches, only paper tape (reinforced type is best) is permitted.
3. Caulking may be used, but only on seams and edges.
4. A one-part enamel or lacquer paint and/or polyurethane varnish or water seal permitted. **Do not use tar-based substances, epoxy glue, duct tape, fiberglass resin or any two-part substances, including two-part varnishes or paint.** Applied paint must be allowed to dry for at least 24 hours prior to launching.
5. Styrofoam or any other flotation-type foam is unacceptable.
6. Boats must be free of sharp edges or anything that could pose a danger.
7. The crew/passenger area of the boat must not be permanently enclosed above the shoulders of the occupants
8. There is no restriction on decorative materials as long as they do not aid in the flotation or propulsion of the boat and do not create a fire or safety hazard.
9. All boats must display their assigned entry number on a vertical surface of the boat. Such number must be at least 6" tall.
10. For boats made and raced by Cub Scouts, total height of boat\crew, with crew on board and seated, must not exceed three feet above the level of the water's surfaces.

Race

1. Each boat must have a designated Captain. He/She must check in at the registration area on the day of the race at a time to be announced prior to the day of the race.
2. Each boat must pass a qualification inspection prior to the heats.
3. Heats will start at a time to be announced by the time of registration.
4. A heat will be run separately for all boats of each Category of each Division.
5. The three boats with the fastest times in the heats will be run in the semi-finals and the fastest two of them will be advanced to the finals where the final winner will be determined.
6. If three or fewer boats are entered in any- Category, they will race in the Heats and finals only.
7. If only one boat is entered in any Division's Category, it will be awarded First Place by default for that Category and will be allowed to race in another Category, to be selected by the Race Committee, in that Division.
8. If no boat finishes in the finals, winners will be based upon semifinal results or, in case no more than three boats are entered, heat results.
9. To qualify as a finalist, participants must have correctly navigated the racecourse around the buoys and all crewmembers must have been in the boat as it crossed the finish line.
10. Any boat not ready to race at the designated time will be disqualified.
11. Navigating crews for Division I and II boats will start in the boats
12. All participants must have passed the BSA "swimmer" test within the last twelve months..
13. All participants must wear appropriately sized, properly fastened, US Coast Guard approved PFD's (life jackets). (Some PFD's are available in camp, mostly youth sizes)
14. Each occupant must be visible while the boat is in the water
15. Participants must retrieve their boat, or its remains, from the water after it has finished racing.

2013 Cardboard Boat Float

AWARDS

Race

For each Category in each Division:

First Place -- To first boat to finish in Final, (Semifinal or Heats if Final or Semifinal, respectively, is not run).

Second Place -- To boat that finishes last in final or second in Semifinal if Final is not run.

Third Place -- To boat that finishes last in Semifinal

King Neptune Award

Most creative design, best use of corrugated cardboard and shows most spirit for each Division.

Davy Jones Award

Awarded to the crew of boat that sinks in most spectacular fashion in each Division.



2013 Cardboard Boat Float

Cardboard Boat Float Schedule of Activities

Friday, June 7, 2013

5:30-10:00pm	Check-in
9:30	SPL/SM Meeting w/ Cracker-barrel
10:00-11:00	Wind-down time
11:00	Taps (all quiet and fires out)

Saturday, June 8, 2013

7:00 am	Reveille
8:30 am	Opening Flag ceremony
8:45 am	Boats to the Water Front!
9:00 am-Noon	Morning boat races
Noon-1pm	Lunch Break
1:30-4:30 pm	Afternoon boat races
5:00 pm	Lowering of colors
5:05-6:30 pm	Dinner in Sites
7:30-8:30 pm	Campfire (w\skits)
11:00 pm	Taps (all quiet and fires out)

Sunday, June 9, 2013

7:00 am	Reveille
9:00 -10:00	Flag Ceremony, Non-denominational Service, Awards Ceremony
10:15-11:30	Check-out
12 pm	Camp All Clear

Have a safe trip home!

Thank you for attending the 2013 Cardboard Boat Float!

2013 Cardboard Boat Float

General Event Information and Polices:

Medical Information & Medical Services

Scouters will not be required to turn in Medical forms to the staff for this weekend event. Unit leaders should have copies of all participants' medical forms on hand as a standard practice for any camping trip.

All units should bring a unit first aid kit and treat injuries within their capabilities. Units must report all injuries and other medical situations to the camp staff at the Health Lodge, even those they treat themselves. Qualified medical personnel will be on duty at the Health Lodge at all times. If necessary, the camp staff will contact emergency medical services and ambulance services using 911. Unit leaders are expected to control all medications within their units.

Check In

The Cardboard Boat Float Unit Check-in will be conducted from 5:30pm till 10:00pm on Friday evening, June 7, 2013 at the Burton Center (Camp Lions). Do not arrive early, there will be no one to check you in, you may **NOT** enter the campsites prior to check-in.

For the safety of scouts walking through camp, only vehicles pulling unit trailers will be allowed in camp. The trailer must be unhooked and parked in the designated area adjacent to your campsite. No Unit trailers are to be parked inside the campsites. Tow vehicle are to be **immediately** moved to front parking lot. All other vehicles are to stay in the parking lots and any addition gear or scouts will have to hike in. Your cooperation is greatly appreciated.

All late arriving adults and Scouts (including adults rotating in and out of camp) must check-in through the Burton Center.

Check Out

Leaders and Scouts leaving camp must check-out through the Burton Center. Scouts may not leave camp for any reason without the leader in charge of the unit signing him out to an approved adult. Unless other written information is presented at check-in, Scouts will only be released from camp to their parent or legal guardian.

Following closing ceremonies on Sunday, all units must depart by 12 PM. When ready for check-out, send a representative to the Burton Center so a commissioner can inspect your site. **THE GATES INTO THE CAMPING AREA WILL BE CLOSED FROM 9- 10AM DURING THE CLOSING CEREMONIES AND RELIGIOUS SERVICES.** ONLY AFTER the closing ceremonies for the event, will tow vehicles only be allowed into the camping area.

Meals

All meals for Boat Float will be provided and prepared by the individual units. Units **will** need to provide and prepare meals in their respective campsites. **NO MEALS ARE PROVIDED FOR THIS EVENT** During the mid-day break and before and after the campfire, the Pipsico Snack Shack will be open to provide hot food, snacks, and beverages for purchase to those who are interested.

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Visitors & Guests

Visitors and Guests are always welcome. They must check in and out of camp through the Burton Center. The unit leader in Charge at the Boat Float is responsible for the behavior of all guests visiting his unit or its members. The adult leader in Charge is also responsible for ensuring that his unit's visitors and guests are aware of the camp's health and safety rules and procedures, and that they are followed. Visitors and guests are not permitted to spend the night.

Adult Leaders

All units must ensure that they meet the BSA two-deep leadership requirement in camp at all times. BSA policy requires at least two adult leaders be in camp at all times; one must be 21 years or older. Leaders may rotate if necessary, but at least two adults must always be with the unit in camp. See Guide to Safe Scouting for clarification. You may share leadership with another unit assigned to your campsite. **TROOPS AND CREWS/SHIPS ONLY** may send scouts as provisional campers if their units cannot attend. Provisional scouts will be incorporated into other units. All campers must be a registered member of the Boy Scouts of America.

General Camp Event Rules

The Scout Oath and Law

The Guide to Safe Scouting

Leave No Trace

NO Sheath knives, fireworks, pets, firearms, electronic games, radios, walkie-talkies, TV's and tape/CD/DVD/MP3/iPod players

Scouts are not permitted to roam through campsites during scheduled activities.

Scouts are not permitted to leave the boundaries of the camp ground.

Staff quarters behind the dining hall, archery and rifle ranges and the cliffs at the waterfront are all off-limits.

Campsites

You may indicate your top three choices for campsites on the Unit Reservation Form. We will try our best to accommodate you. As in the past, campsites will be assigned on space availability and unit size. There is a high probability that another unit(s) could be sharing the same campsite with you. Any unit who has adopted a campsite must have their deposit and request form in by May 25, 2013 to guarantee getting their adopted site.

Campers need to provide their own tents and beddings. All Pipsico tents and cots are in still in storage.

Units should set up their campsite with their unit identification number, an American flag, unit and patrol flags. Duty rosters and schedules should be posted in their site.

Uniform

Units are required to wear the "official Field Uniform" (referred to as a Class A uniform) during Check-in, Check-out, all Camp Fire programs and Religious Services. At all other times participants are encouraged to wear an activity uniform ("Class B"), consisting of a unit or camp T-shirt with Scout pants or shorts. Obviously those scouts directly participating in the Cardboard Boat Float should wear clothing (**including close toed shoes**) that can get wet. Leaders must monitor their units to ensure that clothing reflects good taste and Scouting standards.

Trading Post

The trading post and the "Snack Shack" will be open during the Boat Float. Trading Post hours and Snack Shack hours may be different. These hours will be posted at camp. Be sure to sure your scouts and scouters stop in to see what they have and support Pipsico Scout Reservation!!

2013 Cardboard Boat Float

Parking & Vehicles in Camp

Since safety is our number one priority, vehicles will only be allowed in camp Friday night so you can bring in your unit trailer and equipment and on Sunday morning AFTER the program is complete. There will be no vehicles allowed in the campsite areas or on activity fields. Only vehicles towing unit trailers or **ONE** vehicle hauling unit gear will be allowed into the camping area past the parking lot. Please unload gear at campsite entrances and return your vehicles to the parking lot. Please make every effort to unload completely prior to setting up. Each site has special trailer designated trailer parking. Parking is only permitted in the designated parking areas. All parking for Lions will be either at the Burton Center parking lot, at the overflow lot next to the lake, or at the barn as overflow if required. If overflow parking at the barn is needed a shuttle service will be instituted.

No other motorized vehicles (golf carts, etc.) will be allowed in camp at any time except for use by designated camp staff. If the need arises for a vehicle to be in camp, approval **MUST** first be obtained from the Camp Director (Evan Sommerfeld) or Camp Ranger (Jenny Sommerfeld). Special arrangements will be available for Special Needs Visitors, Scouts and Scouters as requested.

If camp roads are in poor condition due to rainy weather on your day of departure, the Camp Ranger may remove your unit trailer with the camp tractor as it becomes available to prevent damage to the roads and vehicles getting stuck.

Religious Services- "A Scout is Reverent"

Scouts are encouraged to practice the faith of their family. In support of the twelfth point of the Scout Law, we will have a religious service Sunday morning, immediately following flags, in the OA Shelter.

Water and Bath Facilities

Drinking water will be available in all campsites, at the OA shelter in Camp Lions and at the Gregson Center at the front of the Reservation. Very limited drinking water will be available at the waterfront and units are to encourage scouts to bring water bottles with them to the activity area. Units are also encouraged to bring 2 to 5 gallon containers for transporting water.

Primary bathroom facilities are latrines inside of each campsite and limited use "enclosed" toilet facilities are available (both male and female) at the front of the Reservation at the Gregson Center and at the Burton Center in Camp Lions. Shower and toilet facilities are available at the pool shower house and at the central shower facility.

Taps / Lights Out & Fires

Fires authorized depending on the status of the State and City fire prohibitions in effect on the weekend of the camp-out. All ground fires are permitted in the fire rings at each camp site. The Campmaster will update units on the current fire policy at check-in. Units must post water buckets or a fire extinguisher in the fire area. Cutting of live trees, shrubs, or vegetation is prohibited.

A Scout is courteous. All scouts are to be in their designated campsites at 10 p.m. to Wind-down the day's activities. Taps is at 11 p.m. Unit leaders must ensure that fires and lanterns are out and that all their youth have retreated to their tents and are quiet.

Trash Disposal

Participants should practice Leave No Trace principles to the maximum extent practicable. If you packed it in - you pack it out! All units are expected to police their camping area and remove all trash to the dumpsters located behind the dining hall or at the front of camp near the barn. Trash that will not fit in the dumpsters becomes the responsibility of the unit to remove from the campground. **Do not pile trash next to the dumpsters.** If the dumpsters are full at time of checkout then units **MUST** pack out their trash and make arrangements for proper disposal.

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Flag Ceremonies

There are excellent times for scouts who need to participate in a flag ceremony to fulfill this requirement during camp. Slots will be assigned according to the registration date. A backup unit will also be chosen for each slot. Scouts from one unit are welcome (and encouraged) to join with another unit to perform a single ceremony. Units should arrive 15 minutes prior to each ceremony to assembly and practice.

Unit Program Volunteers

It takes many volunteers to operate the activities during the Cardboard Boat Float Races. Primary aquatic and safety staff will be provided for the event, however, the staff requests EACH UNIT PROVIDE AT LEAST ONE ADULT VOLUNTEER to help manage "traffic" on the beach itself. More information will be provided at flags on Saturday morning.

Leader's Meeting

The staff requests each unit's Senior Patrol Leader Scoutmasters meet in the OA Shelter at 9:30 PM on Friday to discuss the activities for the event and any last second changes or additions.

Units are encouraged to provide constructive feedback to the staff at the Leaders Meeting. Additionally, please feel free to contact any staff member to let them know of the good and the bad that is occurring at the event. Please do not wait until after the event has concluded to let us know of something that needs to be fixed. Tell us as soon as possible so we can make this the most AWESOME event for every youth and adult to enjoy!

Saturday Night Campfire

Each unit should be ready to perform a skit or song at the campfire. At the conclusion of the campfire on Saturday Night, there will be a Flag retirement ceremony conducted to properly pay respect to our Nations colors. Units having flags that they'd like to retire need to be turned in during check-in so they can be properly prepared.

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[Boat Float 2013 Unit Roster](#)

Unit: _____

Senior Youth Leader: _____ Adult Leader: _____

Youth:

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Adults:

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Notes: Computer generated forms with similar content are acceptable.

Turn in at Check-in.

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[Appendix A: Registration Form](#)

SEE OFFICIAL FORM AT <http://www.PipsicoBSA.com>

OR

<http://www.TidewaterBSA.com> AND CLICK ON THE CALENDAR LINK.

2013 Cardboard Boat Float

Appendix B: Boat Building Tips and Technique

Developing a Concept:

Determine Division/Category to enter.

Develop a theme

Sketch a creative idea on paper.ⁱ

- Calculate length, width, draft, balance,
- Consider size and weight of crew.

Build a scale model.

Preparing for construction:

Secure adequate work and storage space.

Gather supplies. Those suggested are as follows:

- Corrugated cardboard – three layers for floor, two layers for walls,
- Acrylic latex caulk,
- String line for straight edge, right angle or squaring tool
- carpet knife or Exacto knife, extra blades,
- Wood glue, Liquid Nail panel adhesive, or DAP contact cement,
- Water sealer, polyurethane,
- Foam brush,
- Paint brush or roller, paints, including latex house paint,
- paper tape, masking tape,
- creasing tool (scissors work well),
- Clamps (spring and quick),
- Measuring tape.

Construction steps:

Transfer model or concept to cardboard,

Mark lines,

Cut cardboard,

Bend cardboard,

Brace,

Glue,

Tape,

Seal,

Waterproof

- Materials listed in Construction rules.

Propulsion:

Division I and II paddling type – canoe or kayak paddles, rowboat oars, or team made oars.

Division III type – rotational wheel or propeller or other.

Testing:

Test prior to the event or take your chance! ☺

2013 Cardboard Boat Float

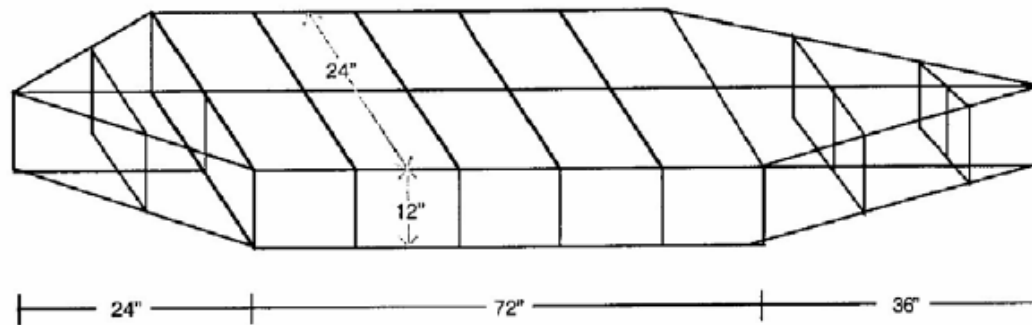
DEVELOPING A CONCEPT

Before you develop a concept, consider these fundamentals of boat design.

A boat floats and displaces a quantity of water equal to the weight of the boat of the crew. If the weight you put into a boat is greater than the weight of the water the boat displaces, the boat sinks.

Water weight approximately 60 pounds per one cubic foot (12"x12"x12" cube).

For illustration, let's look at the smallest size boat, a guppy with a single crew member. Once you understand this example, it'll be easy to calculate for a larger boat.



The above sketch is 24" wide, 12" high and 72" long, with an additional 24" tail and 36" nose, which makes the overall length 132" or 11 feet. The inside volume of the boat it is 17 cubic feet ($L \times W \times H = 6' \times 2' \times 1' = 12'$, plus 2' for the tail and 3' for the nose). As we stated earlier, water is 60 pounds per cubic foot; therefore, this boat's total displacement weight is 1,020 pounds (17'x60 lbs.)

The side of the boat is 12" high; therefore, it takes 85 pounds to push the boat down into the water 1" (1,020 pounds divided by 12=85 pounds). If a single crew member weights 170 pounds, the boat will be pushed down into the water 2" (a 2" draft or waterline). The weight of the boat was not included in these calculations, so the actual draft would be slightly higher. A 2" draft gives the boat approximately 10" before water enters the boat from a wave.

That's the basis of floating (designing) a boat with one crew member. If you put two crew members in this boat (add 175 lbs.), the draft would be 4" and would leave only 8" to the top of the boat-maybe ok for smooth water, but a little wave action might sink the boat.

Therefore, more crew members require a larger boat, to displace more water and still keep the draft small relative to the side of the boat to protect from wave action and sinking.

Now, let's look at other aspects that influence the final design of the boat, such as:

Hull and Prow Types

Stability

Balance

TYPES OF HULLS

Hulls with flat surfaces are easier to build but are not as stable in the waters as others.



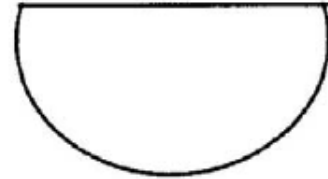
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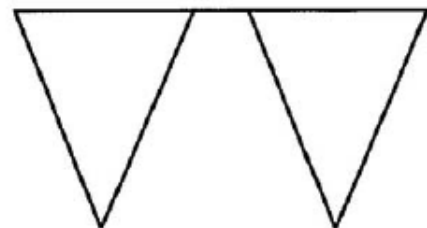
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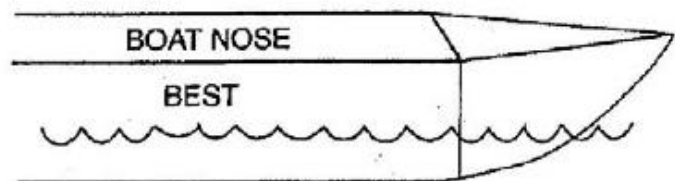
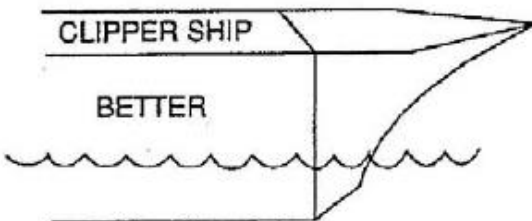
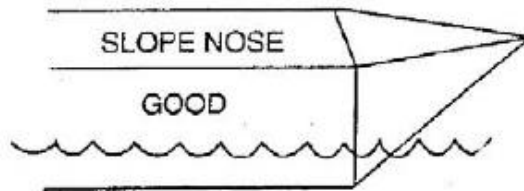
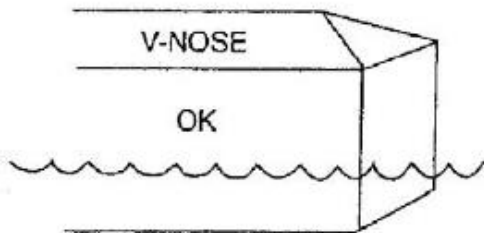
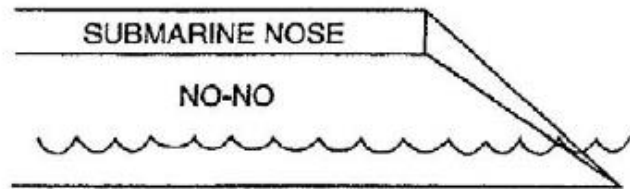
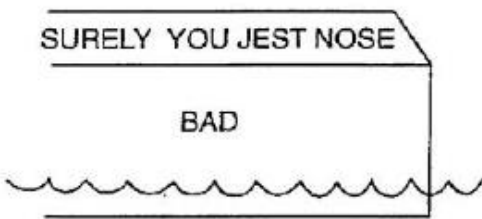
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F

TYPES OF PROWS

Some bow types deflect water better in wave action than others. Keep in mind that you'll need to blend your prow shape with your hull bottom shape or "footprint." Consider where the waterline will be when your boat is loaded

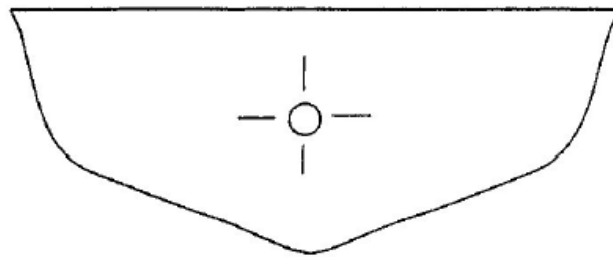


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BOAT STABILITY/DESIGN CREATIVITY

Center of Gravity

The next area to consider is boat stability. The sketch below shows a cross section of a hull and the center of gravity (CG). As crewmembers position themselves in a boat, some of their body obviously sticks out of the boat. The lower the crew sits in the boat, the lower the CG. Your goal is to make the CG at or below the draft (waterline). This makes the boat more and more difficult to tip over.



Balance

The balance of the boat forward and aft is also very important for proper performance. The center of the boat forward and aft is approximately in the middle of the boat. When positioning the crew, keep the most weight to the rear of the boat. By doing this, the prow will tend to stay up in rough water, keeping water from entering the boat from the fronts.

Design Creativity

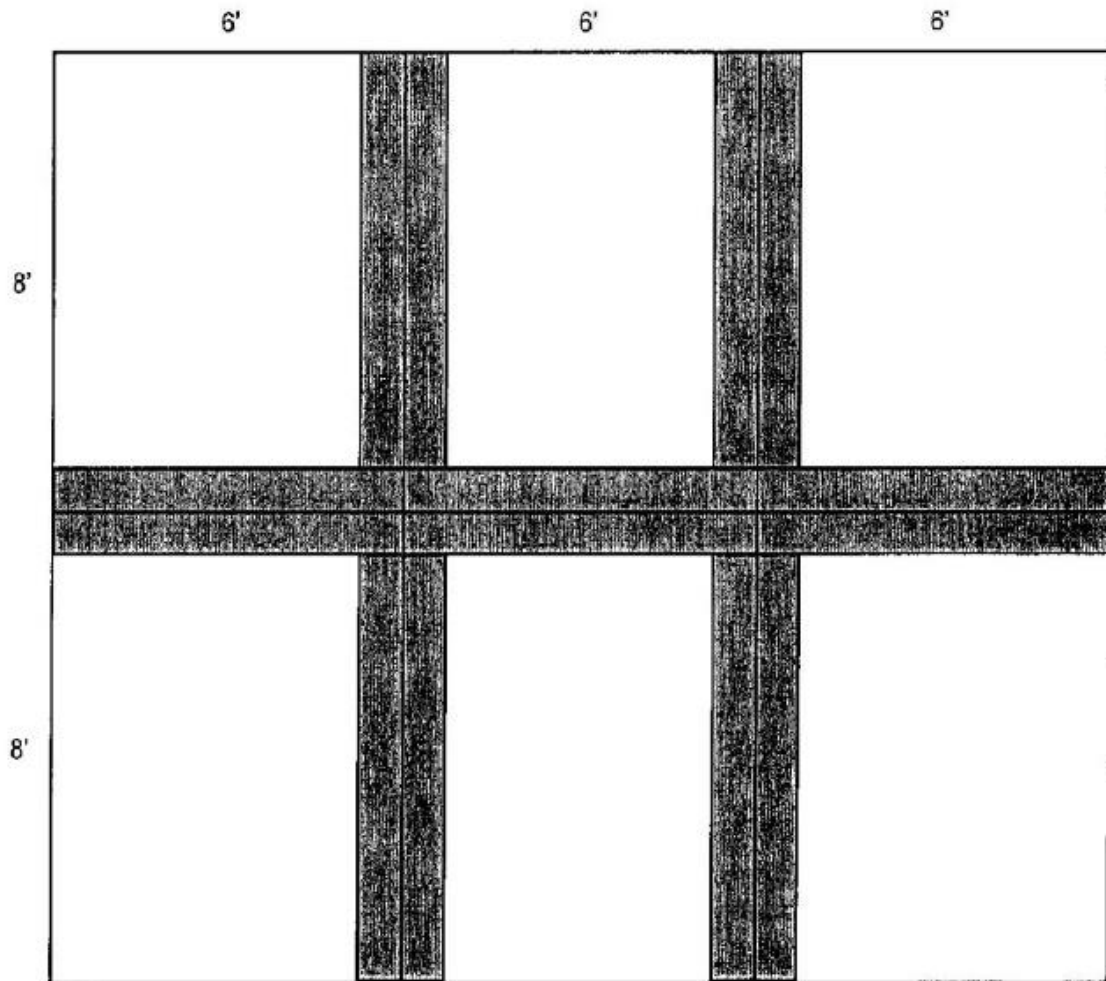
So far, we have only discussed the technical issues of boat design. The more creative part of your boat building project is the boat's theme and decoration (for both boat and crew). The sky is the limit, as long as you follow basic construction rules, which are listed elsewhere in these instructions.

Your boat could look like a Viking ship, a rowboat, a battleship, a tugboat or even banana, a tube of toothpaste or a school bus. Whatever suits your fancy let your imagination be your guide.

2013 Cardboard Boat Float

Appendix C: CONSTRUCTION CONCEPTS:

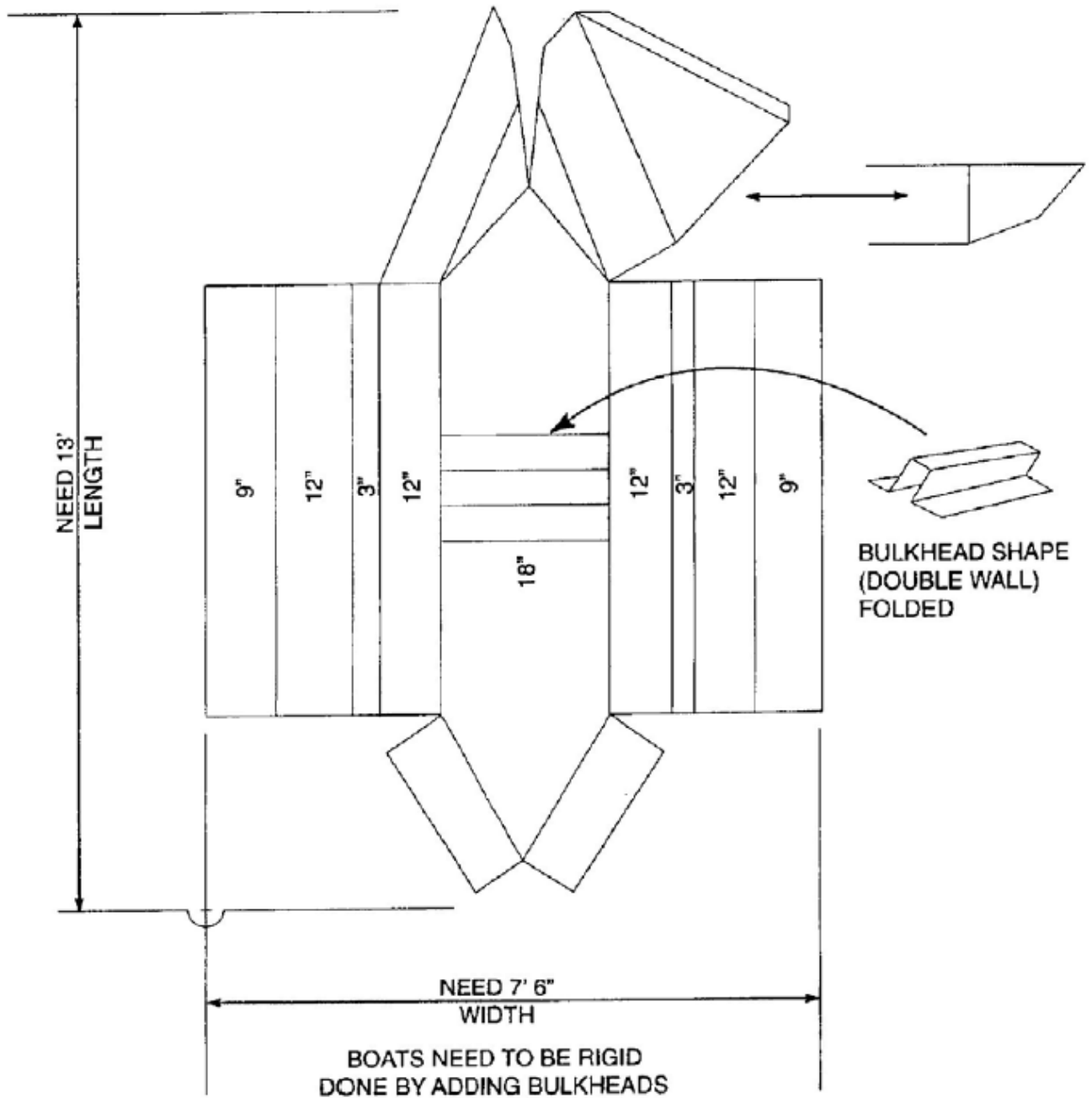
If possible, cut your boat from one sheet of cardboard. As shown below, several sheets of cardboard can be spliced together to make a big sheet. For example splicing six pieces, each 6'X8' produces one large 18'X16' sheet as shown below. Of course splicing fewer pieces together can create smaller sheets.



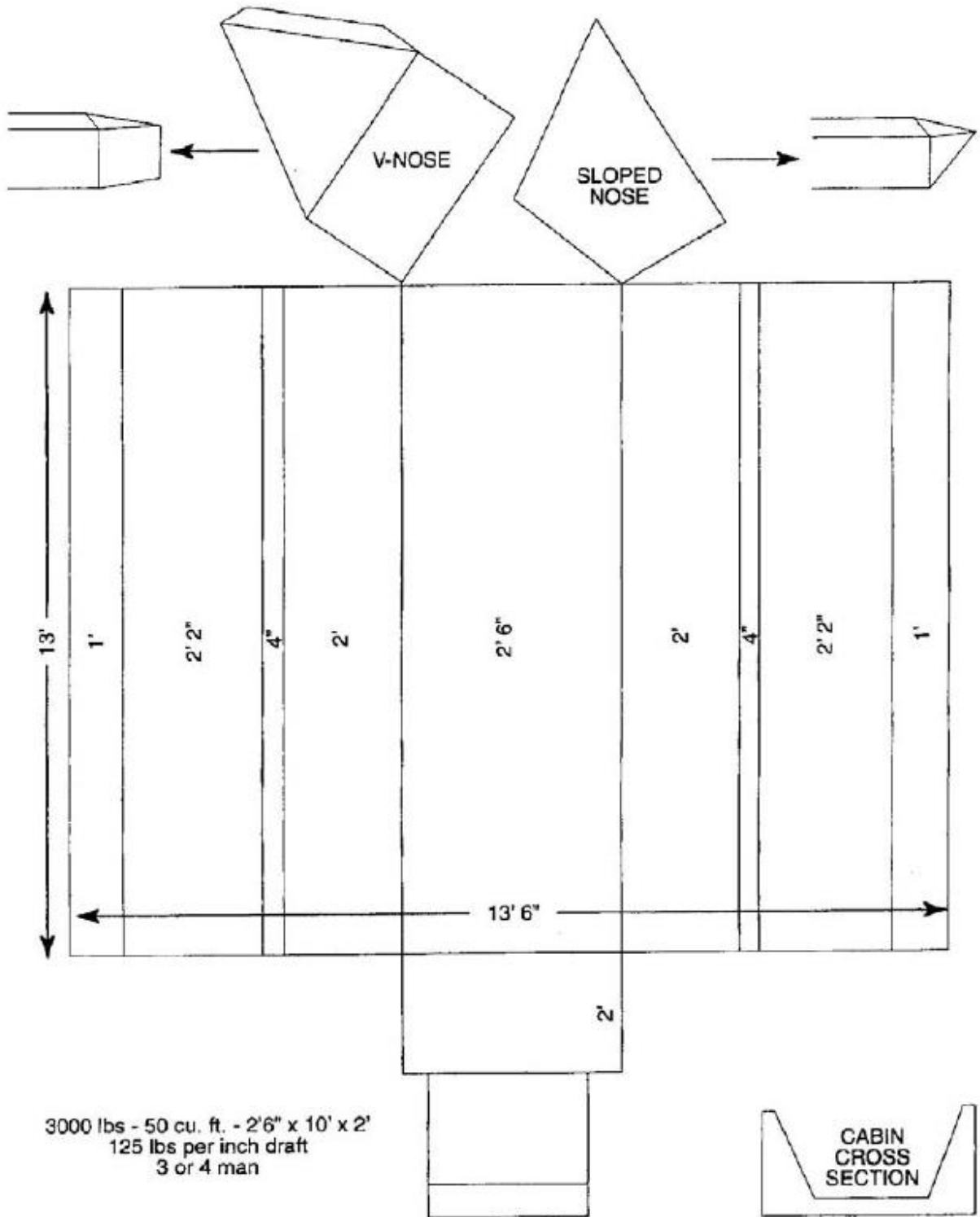
2013 Cardboard Boat Float

SAMPLE GUPPY DIMENSIONS

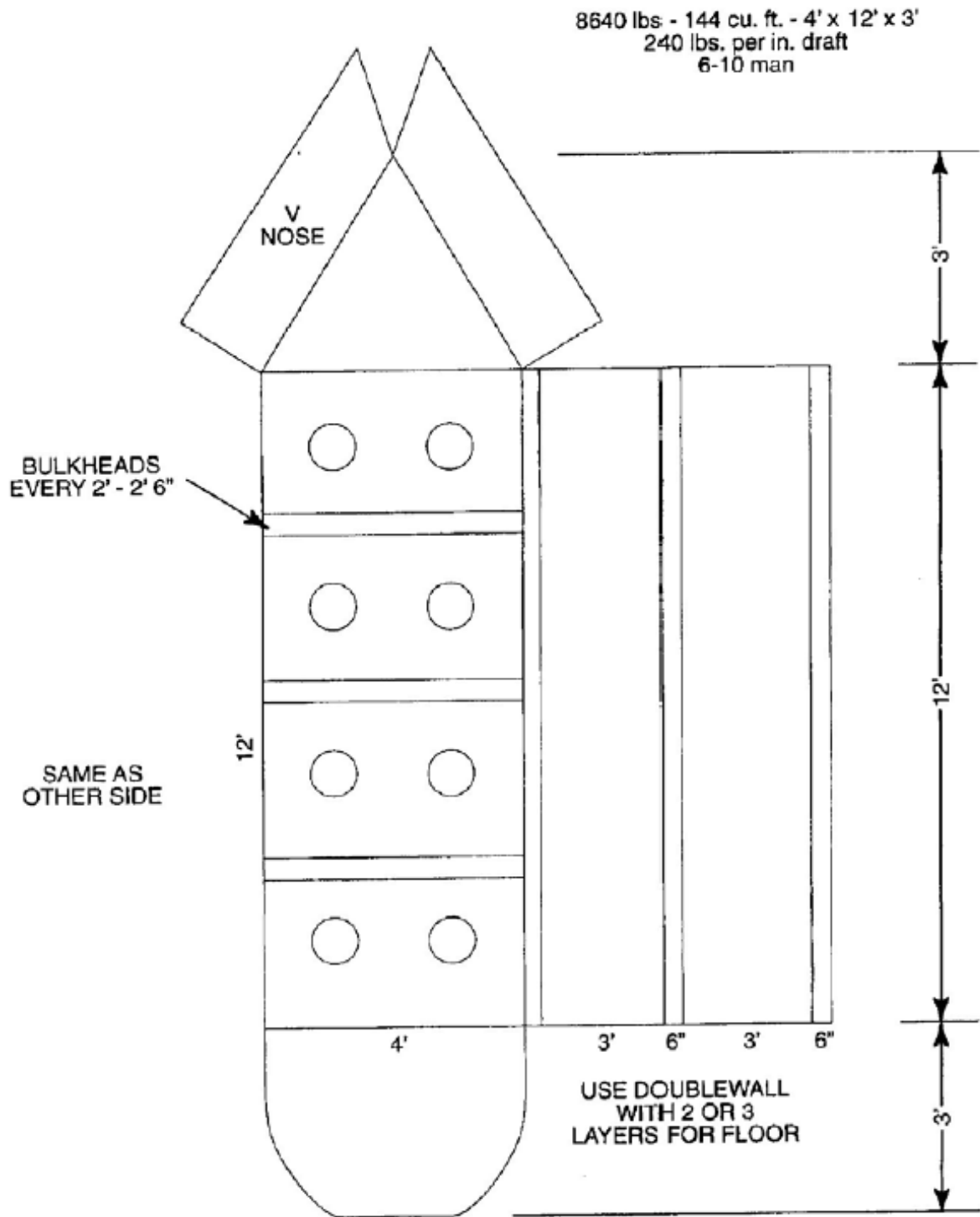
720 LBS.	12 cu. ft. - 1 man	18" x 8' x 1'	8' CABIN
1200 LBS.	20 cu. ft. - 2 man	2' x 10' x 1'	3' NOSE 2' TAIL



SAMPLE DOLPHIN DIMENSIONS



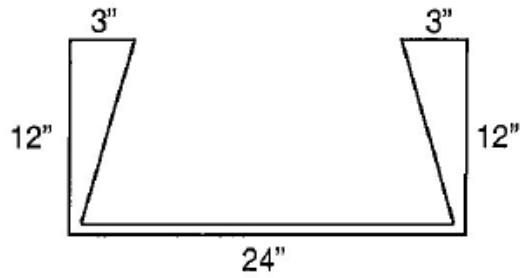
SAMPLE WHALE DIMENSIONS



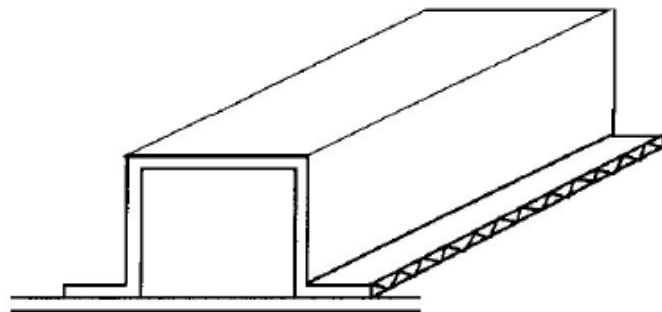
2013 Cardboard Boat Float

Appendix D: OTHER CONSTRUCTION TECHNIQUES

Cross section of boat using a large piece of cardboard:

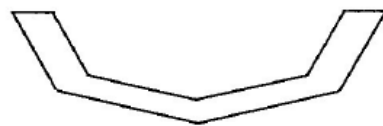


Stiffeners glued to the inside bottom and side of the boat as strength:

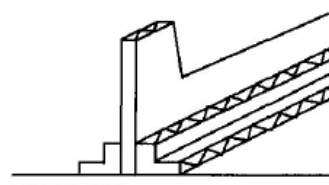


Stiffeners run the length of the boat

Attaching bulkheads to adjacent cardboard (outer boat skin)



Bulkhead side view



How to attach bulkheads