

How to Build & Race a Cardboard Boat



A Photo Journal...

The Supplies

- Corrugated Cardboard
- Elmer's Wood Glue
- Duct Tape
- Long Straight Edge (rule, yardstick, measuring tape)
- Cutting Implement (utility knife, box cutter, tin snips)
- Quick Dry Caulking (latex)
- Paint & Brush/Roller (Outdoor Paint)
- Optional Polyurethane for top coat
- Marking Pens & Pencils
- Weights (bricks or heavy stones)
- Binder Clips or Clamps
- Putty Knife

Cost: Plan \$50 in supplies. It can be more depending on the complexity of the design.

Forbidden Materials!

- Two part glues
- Fiberglass resins and Plastic Epoxies
- Metal
- Plastic
- Foam Core Boards or Styrofoam
- Pasteboard or Chipboard types of Cardboard
- Non-corrugated cardboard (ie. cardboard tubes)
- Wood
- Cardboard that has been factory coated with wax
- Metal foils and paints

When to Start

Although you can build a boat in a weekend, building a good boat that will last through multiple races will take a bit more time. Allow at least a couple weeks so the glue will dry.

Note: Rotary volunteers hold "Boat Building Clinics" November to March. Find dates and locations near you on the web at: www.RotaryRiverRally.com.

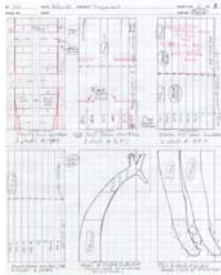
Boat Building Process

Step 1: Draw a design on paper and use this design to build a small mock-up. Use this scale model to determine how many sheets of cardboard you'll need.

The Phoenix Zoo team designed their "giraffe" boat and had a fun time testing the design on the river.



Step 2: Once you have a model that looks good, transfer the design to graph paper using appropriate dimensions. This can be used to draw a pattern on the cardboard sheets.



Hint: Lines to be cut should be identified differently than bend lines.

Design Considerations

- Set a goal: are you building a Fun Boat or a Speed Boat?
- Plan the right size boat - a box 1 x1 x 3 will float 180 pounds... so, if your boat is big enough to hold you, in all probability it will also be big enough to float.
- If you plan to have a 6 person crew, build a boat that will fit 6 people. Be sure that you account for their weight. 6 kids will take less boat than 6 grown adults!
- Flat Bottoms tend to be less "tippy" than V-shaped bottoms.
- The lowest center of gravity (sitting in the bottom of the boat) is the most stable position. Kneeling or standing... you'll probably tip over.
- Dimension Considerations
 - Longer boats go faster, but they are harder to turn.
 - Boats shorter than 10 feet are difficult to steer straight.
 - 10-12 feet in length seems to be just about right.
 - Don't make your boat sides too high. For example, 18 inches in height will allow room to sit and paddle without the edge of the boat blocking your arms.
 - Plan width based on the number of people. If there will be just one paddler, don't go wider than 30 inches. If there are two, try about 48 inches.

Step 3: When you are ready to go, start with flat sheets of cardboard.

Any bends or folds in the cardboard will weaken the boat, so try to get flat, unused sheets of cardboard if at all possible. Inland Container has been kind enough to support the Rotary each year by donating cardboard. When available, this cardboard is stored outside the City of Tempe Operations office, underneath the Mill Avenue Bridge. Call the Rotary River Rally Hotline (480) 905-5944 for availability.



Once you have the flat cardboard, draw the design on it. Then you are ready to start cutting & bending.

Hint: To bend cardboard cleanly, make a dent or a crease in the flat cardboard using a blunt rounded tool like the handle end of a crescent wrench.



Step 4: Usually a boat will be made up of multiple pieces, assembled together and glued.



Hint: After gluing, use a clamp to hold the glued parts together until dry (1/2 - 1 hour).

Waterproofing Tips

- Paint all surfaces of the cardboard before gluing (rollers paint faster than brushes). A polyurethane porch and deck enamel works good. Use 3 coats.
- Caulk edges (cut nozzle at angle to make a U-shape to run along edges).
- Glue after painting and caulking. Squeegee glue across entire surface to be glued.
- Avoid oil-base stains, caulk and glue. The oil soaks into the cardboard, may never dry and this will weaken the cardboard. No hot-melt glue guns allowed - this glue "melts" on warm days.
- Reinforced paper tape works best over caulked edges and seams. Duct tape is bad... it shrinks when painted. Clear tape is bad... it melts when painted.
- 3 layers of cardboard is plenty strong for the bottom of the boat.

Step 5: Caulk all of the folds and corners to seal then paint all of the individual pieces. Any type of leftover paint could be used for this. (Note: You can caulk after painting.)



Step 6: Put the pieces together and glue them. Once the glue dries, another round of caulking may be in order.



Step 7: Now comes the fun part - painting and decorating the outside!





Step 8: Don't Forget the Costumes! These can get pretty elaborate...



Dragon Boat Crew in Gi's & Headbands

Darth Vader and his Starship



Everyone's favorite Rubber Ducky...

Cardboard Boat Preview

Plan to bring your boat out to the Cardboard Boat Preview on Friday night (4 - 8 pm) at Tempe Town Lake. Spectators will vote for their favorite boat to win the "Peoples Choice Award". (Overnight storage provided.)

The Great Cardboard Boat Regatta®

Registration begins at 9 am on Saturday. Races will start by 11 am.

After registration, all boats go through a technical inspection. Nothing but cardboard, glue and paint... They'll be looking for things like Styrofoam, metal, screws. Don't do it!

Finally all dressed up and ready to go. Be prepared to carry your boat to the starting line.



Getting into the boat can be tricky. Watch your balance & don't capsize... Paddle Hard!!!



Bring A Cheering Section

The "Sexy Salmon Squad won the races in 2002. They came prepared in 2003 with their own cheering section... in uniform!!!



Come prepared to do minor repairs between races - mainly to patch any leaks...



Collect your Prize...

Our "dragon boat" won the Vogue Award. The guys from National Semiconductor in Riff Raff IV beat Sexy Salmon to take First Place in the Adult Division.



Last step -- please don't leave without throwing out the trash... Sometimes cardboard boats can get a bit soggy...



Plan to come back again next year... sure to be bigger & better than ever!!!