THE GREAT CARDBOARD BOAT RACE
INTRODUCTION, BOAT BUILDING & RULES
by United Way of Elkhart County

WHEN:
Friday
August 26
2016

WHERE:
LaSalle Bristol Pond
Elkhart
The Great Cardboard Boat Race is the official kick-off for United Way of Elkhart County’s fundraising campaign. This event raises awareness, get people excited, celebrate the spirit of working together and helps increase workplace campaigns so that we can better advance the common good.

Being a part of the Great Cardboard Boat Race can be a great Team Building activity for your business. Your employees get to design, name, build and sail their own boat. On Race Day, the other employees can come cheer them on. There are a number of workplace benefits:

- Facilitates better communication
- Promotes creativity
- Deepens relationships
- Increases morale
- Improves problem-solving skills
- Celebrates giving

Boats are made entirely of cardboard and powered by two paddlers. They will race around the LaSalle Bristol Corporate Pond. Boats compete in individual heats for honor, glory and some pretty big trophies.

As a part of our fleet you will:

- Have a boatload of fun
- Compete in an amazing event
- Receive 100 tickets to the Food Truck Smorgasbord pre-event ($100 value) and 2 free t-shirts for your team (with the chance to buy additional shirts).
- Get five pieces of 4x8 foot cardboard (with the chance to buy additional pieces).
- Have a safe racing environment on race day.
COMMITMENT
Captains and Crews who wish to participate in the United Way of Elkhart County’s Great Cardboard Boat Race event make a commitment to the following:

• Construct a boat out of cardboard and duct tape.
• All boats are human powered (oars and paddles are acceptable as propulsion tools; you provide the oars/paddles; minimum of 2 people)
• Participate in the entire event which includes:
  • Bringing completed boat to the wharf on Thursday, August 25 by 5 p.m.
  • Attending the Pre-Event Boat Crew Orientation on Thursday evening (5:00 - 6:00 p.m.).
  • Securing your boat for over night on the wharf (we will provide one roll of visqueen but recommend additional tarps/cover)
  • Attend the race on Friday by checking in by 1:30 pm at the latest.
  • Stay for brief awards ceremony after the race
  • Dispose of or remove boat from property after the race

IMPORTANT DATES
August 5, 2016
Last day for boat’s to register. All boats must have submitted their final Name of Boat (or boat will be only known as the business name)

August 25 - Boat drop-off
Boats must be brought to the United Way “pier” by 5:00 P.M. From 5:00-6:00 there will be a Boat Crew Orientation. Boat crews must come to the Boat Crew Orientation. During this time, we will collect team members’ signed waivers, and give out t-shirts. At the end of the meeting, boat crews will cover/protect their boat for overnight.

August 26 - Race Day!
Each boat entry will receive 10 complementary food vouchers for the Food Truck Smorgasbord pre-event ($100 value). From 11:00 am through the race, guests will have the opportunity to eat a variety of foods from the best Food Trucks in our area, check out the boat displays in the wharf and “vote” for their favorite boat with dollars. This is a great opportunity for boat builders to solicit “votes” for the People's Choice Award.

Boat crews should arrive by 1:30 p.m. At this time they will be introduced to their race liaison and the Guest Judges will also pick their favorite boat. Teams are encouraged to come earlier if they have a staging area they wish to set up in the wharf. The first boats hit the water at 3p.m. Awards ceremony begins immediately after the final race.
**RACE COMPETITION**
Boats will randomly draw a heat. The winner of each heat will move on to the final race.

**AWARDS**
*First, Second and Third Place Trophies* will be awarded for the top three boats in the final heat. A cardboard boat must complete length of the course to qualify as a “finisher.” Swimming crewmembers pushing a boat (or some portion of it) through the course is not considered “racing.” The boat (or some portion of it) must be maneuvered and propelled by at least one paddling crewmember.

**Cardboard Crusaders Race**- any boat that is still sea worthy (and a “finisher”) and not in the finals is allowed to participate in the Cardboard Crusaders race. This race is a one or two lap race with the winner receiving a special cardboard trophy from Welch Packaging.

**Race Medals** - Guaranteed to all registered participants including crew members and boat builders. These are handed out during the awards ceremony and each crew is recognized.

**Special Trophies** will be awarded for the following:
- **Best in Race Award** (1st place) - First boat to cross the finish line in the final heat. Best in Race receives a traveling trophy for one year and will have that trophy replaced at the end of the year with a permanent one they can keep. **Second and Third place trophies** will also be awarded for the final heat.
- **Judge’s Choice Award** - Awarded by the judges based on creativity, showmanship and team spirit. Costumes and props are encouraged!
- **People’s Choice Award** - Awarded to the boat that receives the most “votes” (in monetary terms) cast by the spectators throughout the day until the conclusion of all races. Votes will also be collected at the Special Event the night before the race and online through facebook. For the past two years, boats who have won this award have done outside fundraising including sponsorships from their own vendors for their boats.
- **Way to LIVE UNITED** – This award was started in 2012 in honor of United Way of Elkhart County’s 90th Birthday. The staff awards this to the team who most embodies the LIVE UNITED spirit.
- **Cardboard Crusader Trophy** (sponsored by Welch Packaging) - goes to the team who wins the Cardboard Crusader heat (see above).
- **The Wonder That Went Down Under Award** (Most Spectacular Sinking) - Awarded to the crew who, in the opinion of the staff, was the most spectacular in the way the ship and its crew went down. (As long as the boat or some part of it is propelled by at least one paddling crewmember, the boat may continue to the finish line.)

**Awards Ceremony** - will be held in conjunction with the Campaign Kick-Off Rally after the final heat, after the race and all boats are out of the water and the area is cleaned up.
The ENTIRE boat must be built of cardboard, duct tape, and one-part polyurethane. (Any part of your boat that touches the water must be cardboard. This includes the hull, decking, keel, cowling, superstructure, oar locks, seating and rudder. Nuts, bolts, washers and staples are NOT allowed in hull construction. The cardboard may be as thick as you want, but may not be glued or attached to wood, plastic, fiberglass, etc.)

- Only exceptions are the paddles & decorations
- Use cardboard boxes, “blocks”, carpet tubes
- NO pre-treated cardboard allowed
- No Sona-Tubes, waxed or ‘treated’ cardboard
- NO wood, plastic, styrofoam or fiberglass
- NO caulking compounds or two-part/mixed adhesives
- NO wrapping in duct tape, plastic or fiberglass or similar product
- Duct tape may be used to reinforce seams
CONSTRUCTION AND RACE RULES

- Duct tape, masking tape, or adhesives such as ‘liquid nails’ CAN be used to connect cardboard to cardboard and CAN be used to reinforce all seams and stress points. It CANNOT be used to waterproof boats.

- Waterproof the boat with Varnish, Paint or Polyurethane (one-part, paint-like substance). (If you don’t want your boat to sink, waterproof the entire boat with any paint-able, one-part substance like Varnish or Polyurethane inside and out.)

- Decorations are encouraged -as long as they don’t effect structural strength or buoyancy

- Boats CANNOT tow anything behind them for the safety of other boats.

- The crew compartment CANNOT be enclosed so as to interfere with escape

- **Every crewmember must wear a PERSONAL FLOATATION DEVICE (PFD) & proper footwear.** Please provide your own PFDs.

- All crew members MUST sign a Participant Waiver/Hold Harmless Agreement on race day. Boats will not be allowed to race without a signed agreement from each race participant

- Minimum of TWO crewmembers

- All boats are human powered (oars and paddles you provide are acceptable as propulsion tools)

- Alcoholic beverages are NOT permitted at any time
CONSTRUCTION AND
RACE RULES

- Boats should weigh less than 200 lbs – This rule is for us. (Please keep your boat under 200 lbs. If you need help getting out of the pond, we need the odds stacked in our favor.)

- Boats should be less than 6 feet wide – Here more is not better

- Care should be taken that construction does not include pointed objects and sharp edges that could injure anyone

- Surfboard style designs are NOT allowed. Consider “staying dry” part of the challenge.

- Raft style designs ARE allowed. (The distinguishing feature of a raft design as opposed to a surfboard style is the use of cardboard “logs” and other such accoutrements as one would expect to find in/on a raft. Think Huck Finn.)

- **RACE DAY** - Please check in (entire crew) at the registration table on race day no later than **1:30 p.m.** (Boats arrive the day before the race at 5PM). Unload your boat in the display area. After unloading, please move your vehicle to the parking lot. Set up your boat display. After the safety inspection is complete, Boats will race other boats around the corporate pond. After the race, the boat crews must remove all cardboard, decorations and other materials from the water and the grounds. Volunteers will be on hand to help. You can take your boat home with you or dispose of it in on-site recycling bins.

- If there is any doubt about the construction, the judges reserve the right to use a probe, such as an ice pick, to test and verify that only cardboard has been used. Failure to abide by any design, race rule or the direction of a race official shall be cause for disqualification. The Judges’ decision shall be final. Please contact the United Way office if you have any questions.
CONSTRUCTION MATERIALS

Permissible Materials

☐ Corrugated Cardboard
  ☑ Appliance or grocery stores

☐ Cardboard “blocks”
  ☑ Furniture stores

☐ Cardboard Tubes
  ☑ Carpet/linoleum stores

☐ Fastening material
  ☑ Duct or masking tape
  ☑ Liquid nails adhesive

☐ Latex Paint, Varnish

Materials NOT Allowed

☐ Wood, Styrofoam

☐ Plastic sheathing

☐ Fiberglass

☐ Sona-Tubes, coated cardboard

☐ Silicon, Wax, Tar

☐ Caulking compounds

☐ Metal

☐ Staples, clamps, screws

Judges decide on the interpretation of the rules
CONSTRUCTION MATERIALS

EXAMPLES

- Carpet Tube (about 4 ½” dia.)
- Cardboard Block (2-3” thick)
- Cardboard Box - cut open
Consider the size of the boat - building & transporting

- Big enough to hold crew, small enough to transport and carry
- Wider is better for stability, but still must be able to paddle
  - No surfboard style designs are allowed
  - Rafts are allowed
- Consider total weight of all materials when wet
- EVERYTHING must be removed from the pond

Boat decorations and crew costumes are encouraged - use your imagination; you will be awarded for your creativity!
CARDBOARD BOAT PHYSICS

“How much will you sink?” - Displacement

Weight of Water = 62.4 pounds/cubic-foot

Water Displaced (ft^3) = \( V = L \times W \times H \)

Weight-of-boat-&people-lbs

62.4lbs/ft^3-H2O

Depth (ft) boat sinks

EXAMPLE:

Box boat, 3ft x 6ft, 1 ft tall (high)
Boat volume = 3’ x 6’ x 1’ = 18 ft^3
Boat displacement = 18 ft^3 x 62.4 lbs/ft^3 = 1123.2 lbs
Which equates to 93.6 lbs per inch of boat height
“Wider is Better” - Center of Buoyancy
EVEN MORE CARDBOARD
BOAT PHYSICS

Movement Through the Water

Simple Box

Slanted Box

V-Shaped Bow

Outrigger Design

Pontoon Design

Raft Design
CARDBOARD BOAT DESIGN SUGGESTIONS

☐ Set the Design Goal: Fun, Speed and Appearance

☐ Sketch out your design

☐ build a scale model from manila paper:
  - estimate materials or plan how to use what you have
  - plan out what construction techniques will be used

☐ 1’x1’x3’ box will float 187 lbs.

☐ if it’ll hold you, it’s big enough to float

☐ Flat bottom, sit-to-paddle & canoe styles - are the best/easiest

☐ Rudders help keep you straight but make turning difficult and adds complexity to your design.
Long boats go fast - but are harder to turn

Short boats (<8’) - are difficult to keep straight

Best Length: 8-12 feet

Best Height: 18 inches
   - allows room to sit/kneel & still paddle over the edge

Best Width:
   - 18”-30”(max) for 2 or more people front and rear
   - Minimum 48” wide for 2 people side by side

Kneeling is a “power” position but sitting is more comfortable
CONSTRUCTION TIPS & TECHNIQUES

- Cover all edges of cardboard - acts like siphon
- Cardboard Tubes make great frames
  - Cut for joining & bending
  - Fasten tubes together
- Cardboard Hull
  - 1-2 layers, fasten & cover the seams
  - With 2 layers, overlap the seams & polyurethane in between
  - Decorate, paint & varnish
- Reinforce the area where you sit, kneel or stand
Carpenter’s glue and liquid nails work well
(hot-melt glues will melt in the heat and sun)

Duct tape only non-painted surfaces (tubes or frame that will be covered)
- Duct tape shrinks when painted
- Duct tape should be covered with masking tape if you need to paint it
- Clear tape melts when painted
- Masking tape works well on glued edges & seams
- Kraft paper with spray adhesive may also be used
CONSTRUCTION TIPS & TECHNIQUES III

FRAMES

- Solid Tube Frame
- Center/Cross Beam Frame

CONNECTING TUBES

- Cardboard Wrapper for Tubes End-to-End
- Cardboard Wrapper for Tubes At Right-Angles
FRAME ANGLES

V-Shaped Cuts

Multiple Cuts for Sharper Angles

TUBE CUTTING TEMPLATE
CONSTRUCTION TIPS & TECHNIQUES V

FOLD & OVERLAP CARDBOARD AROUND CORNERS
Crease/Score a line for a nice STRAIGHT FOLD
Multiple cardboard layers “glued” together on the sides to strengthen the hull.

Multiple trapezoid-shaped pieces “glued” together to form a “support block”.

A sheet of cardboard could be folded & “glued” together to form tubes/beams.
GO BUILD YOUR BOAT

WE’LL SEE YOU ON THE CORPORATE POND
AUGUST 26, 2016

Boats arrive August 25th at United Way at 5 PM.

If you have questions, contact:
Ann or Bill

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