CornellEngineering
Civil and Environmental Engineering

CORNELL UNIVERSITY

# CONCRETE CANOE PROJECT TEAM

2017
2018

SPONSOR PACKET

ASCE
American Society of Civil Engineers


ABOUT US

# ABOUT US

Cornell Concrete Canoe was founded in 2000
to take on the challenge of
designing and building a concrete canoe.

Our team rigorously works together to create
a concrete mold that is light enough to float
on water and strong enough to race
in competition. From analysis to casting,
team members gain experience
on concrete design and project
management outside of the classroom.

# THE TEAM

Our team includes 45 students from civil, environmental, chemical, mechanical, computer science, and operations research engineering. The project team is comprised of six main subteams: Analysis, Mix, Mold, Business and Logistics, Aesthetics, and Paddling.

# THE SUBTEAMS

## Analysis

The Analysis Team focuses on mathematically analyzing the forces on the canoe. In addition, the Analysis Team puts together a hydration system to ensure proper curing of the concrete.

## Mix

The Mix Team is responsible for making the lightweight concrete used for the construction of the canoe. The team picks out the materials, designs mixes with different proportions of those materials, makes small batches of each mix, and judges them according to strength and workability standards. Just before cast day,they consult with the Mold and Analysis subteams to decide which mix will be used for the canoe. The Mix Team also works closely with the Aesthetics subteam to make a concrete-based paint used to design the canoe.

## Mold

The Mold Team constructs a cedar strip canoe that is used as a wooden mold for the concrete canoe. The Mold Team is also in charge of the actual casting of the concrete canoe each year.

## Business & Logistics

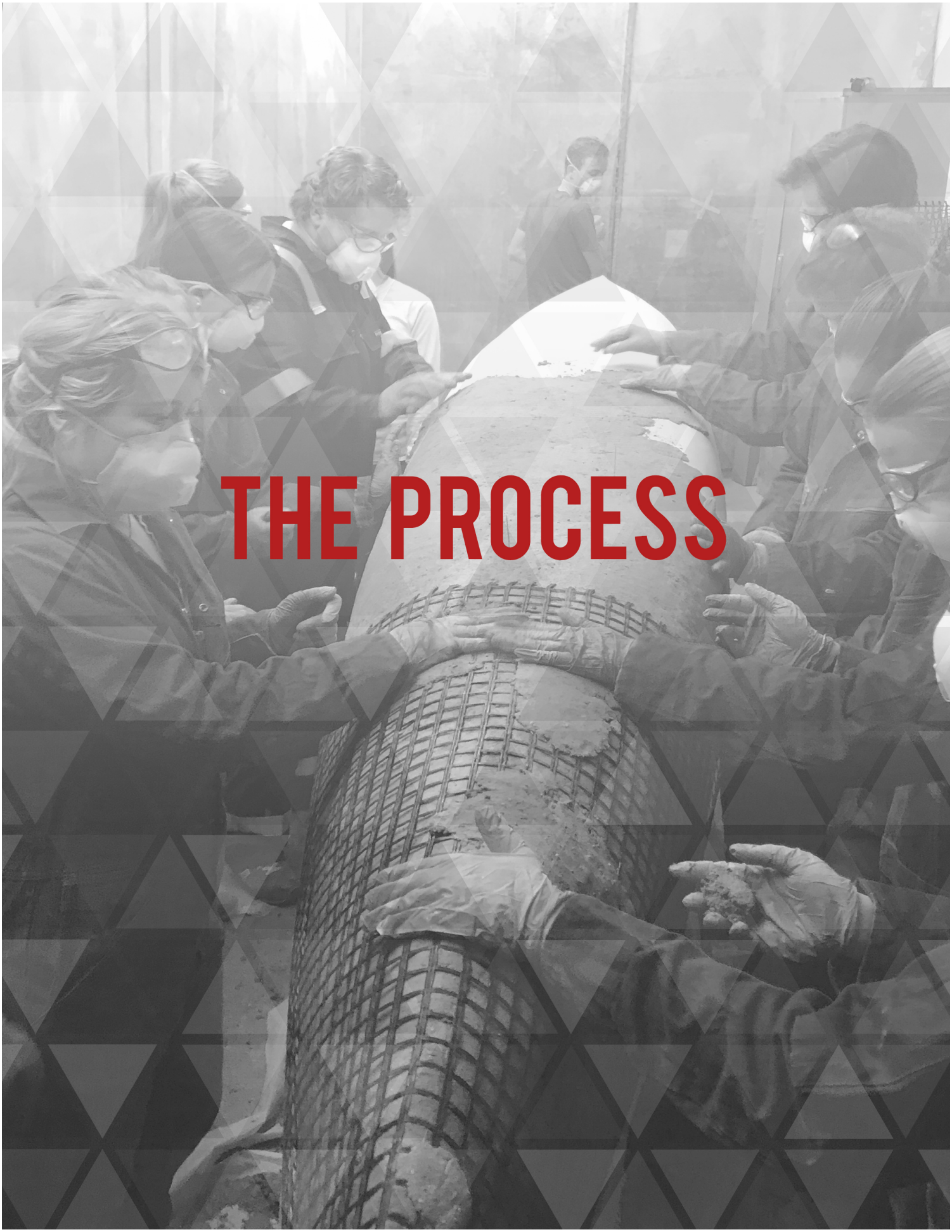
The Business and Logistics Team helps keep the team running smoothly by managing project scheduling, competition logistics, and budget constraints for the team. They also handle donor and sponsor relations as well as the team's external communications and digital presence.

## Aesthetics

The Aesthetics Team is responsible for the finishing of the canoe. The team organizes thesanding of the boat, designs and applies graphics, and applies the final sealant. They also build stands for the canoe, create the display board, and design images for use on team apparel, design reports, and presentations.

## Paddling

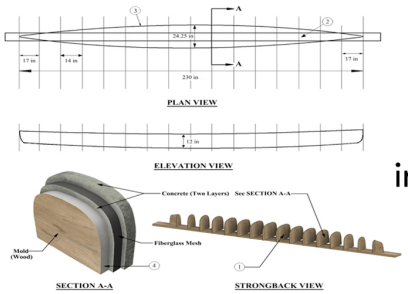
Throughout the year the Paddle Team focuses on training for the races at competition. We work with our coach, Olympic paddler Terry Kent, to refine our technique and speed.



# THE PROCESS

# STEP ONE HULL DESIGN AND STRUCTURAL ANALYSIS

The construction of the canoe starts with in-depth design and analysis. Using mathematical research and computer modeling, the Analysis and Mold Teams decide which hull design will maximize the strength and stability of the canoe while minimizing cost, weight, and drag force.




# STEP TWO DEVELOPMENT AND TESTING

The Mix Team then addresses three primary goals: to develop a low-density, yet strong and workable concrete mixture, to improve the casting process in collaboration with the Mold Team, and to expand knowledge of concrete materials. Ultimately, the Mix Team will test and choose a concrete mixture to use for the canoe.

# STEP THREE CONSTRUCTION

After design and development, the Mold Team creates the wooden mold of the canoe through a process called cedar stripping, which involves securing wooden cross-section slices to the strongback to create an overall shape of the canoe. Next, narrow strips of cedar are laid across the length of the canoe onto this backbone in an alternating pattern. Once the stripping process is complete, the team sands and applies epoxy to the canoe. Then, it is time for Cast Day, during which we apply the chosen concrete mixture to the wooden mold in two thin layers and a mesh layer until we have a full concrete canoe. Once casting is complete, the concrete cures under controlled humidity conditions. After wet curing, the concrete boat is removed from the wooden mold. It it sanded until smoother, and the Mix and Aesthetics Teams add a design and final sealant layers to the canoe. Finally, we have a competition-ready concrete canoe.

# STEP FOUR COMPETITION

Every year, we take our finished canoe to the ASCE (American Society of Civil Engineers) Upstate New York Competition. Teams are scored on design report, oral presentation, final canoe product, and competitive race results. The top teams in the region then get an opportunity to compete in the ASCE National Conference against other regional champions.


# PAST RESULTS

2017 | 4th Place Overall in ASCE Upstate New York Regional Competition.
2016 | 3rd Place Overall in ASCE Upstate New York Regional Competition.
2015 | 6th Place Overall in ASCE Upstate New York Regional Competition.
2014 | 2nd Place Overall ASCE Upstate New York Regional Competition and appeared in ASCE National Conference.

# SPONSORSHIP

# WHY CONTRIBUTE

- Contributions enable team members to gain experience and leadership skills
- Help cover the costs of competition fees
- Logo visibility and brand exposure to undergraduates on campus and at competition
- All donations are tax deductible
- Recognition on our team website, social media, and apparel

# WHAT WE NEED

| Item | Estimated Amount (2017-2018) |
|---|---|
| Cenoshperes | $1,400.00 |
| Fibers | $140.00 |
| Poravers | $130.00 |
| Power Tools | Varies by Year |
| Pigments | $575.00 |
| Respirator Masks | $120.00 |
| Graduated Cylinders | $115.00 |
| Travel/Competition Fees (includes bus transportation, truck rental, competition shirts, design report, registration fees, and hotel)* | $5,725.00 |

*It costs approximately $150.00 to send one student to Regional Competition.

# HOW TO CONTRIBUTE

**Donate Directly Online Here**

Please Input the Following Information:

**Designation:** *Cornell University, Other*

**Other Designation / Special Instructions:** *Cornell Concrete Canoe Project Team*

For In-Kind Donations, please email us at exy2@cornell.edu

# SPONSORSHIP LEVELS

## Gold Sponsor | $1,500+ in Money or In-Kind Donations

- Receive a piece of one of our previous concrete canoes used in competition
- Placement of company logo on team apparel for regional and national competition
- Acknowledgement of your contribution on our team website and social media with company name and logo

## Silver Sponsor | $1,000 to $1,500 in Money or In-Kind Donations

- Placement of company logo on team apparel for regional and national competition
- Acknowledgement of your contribution on our team website and social media with company name and logo

## Bronze Sponsor | $500 to $1,000 in Money or In-Kind Donations

- Acknowledgement of your contribution on our team website and social media with company name and logo

# PAST SPONSORS

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# CONTACT US


**Email:**
Ellen Yao
Business and Logistics Subteam Lead
exy2@cornell.edu

**Address:**
Cornell Concrete Canoe Project Team
Attn: Amina Rahill-Marier
220 Hollister Hall
Ithaca, NY 14853 USA