



## Michigan Tech Concrete Canoe 2015-2016

This past year was an exceptional season for Michigan Technological University's Concrete Canoe Team. Michigan Tech successfully defended its title at the regional level and proudly earned an 8<sup>th</sup> place finish at the National Competition in Tyler, Texas.

With the 100<sup>th</sup> anniversary of the National Park Service, the team chose National Parks as the 2015-2016 theme. The national park system is an untouched and pristine wilderness that represents the American spirit. One of the largest mountains in North America, perviously know as Mount McKinley, lies in Denali National Park and Reserve in Alaska. The mountain was given it's original name, Denali, by the Koyukon people long ago. To honor the restoration of this native name, *Denali* was chosen for this years canoe. The National Parks theme was carried throughout the display table, cross section, and canoe stands, proudly representing the natural beauty that covers the landscapes of the United States.

*Denali* built on the previous success of *Talvi Sielu* while improving the hull design. Further modifications were made to the hull design to ensure optimal stability and turning ability. This years' hull design used a rounded bottom hull and decreased freeboard to allow paddlers to reach farther during a turn. Righting moments (RM) were used this year to quantify the canoes stability. Credit for *Denali* is attributed to Drew Roberts, who worked to make an innovative and advanced hull design.



2015 Michigan Tech Concrete Canoe at a Glance	
Name	Denali
Weight	162 lbs.
Width	30.8"
Length	19'
Depth	15.1"

## 2016 National Competition

In June, Michigan Tech traveled to the national competition in Tyler, Texas. Before the competition, Michigan Tech was externally ranked as a potential top 10 contender. All of the team's research and training paid off at The University of Texas at Tyler. The team once again gave a nationally ranked presentation and received 5<sup>th</sup> place. The paddling team also placed top 10 in all races, including two 4<sup>th</sup> place finishes in by Taylor Wiegand and MaKenna Stelpflug in the women's endurance and sprint. The 8<sup>th</sup> place finish overall was rounded out by a well-written design paper and a beautiful final product.





The outstanding paddler performances was a result of rigorous weekly practices and knowledge transfer of skills passed on from older members. Outdoor paddling practices were held three days a week to hone turning skills and develop endurance in the water. During the winter months, indoor workouts were held to further strengthen paddler's endurance and better prepare them for races at the regional and national level. The 5<sup>th</sup> place presentation finish is attributed to the high level of commitment from the presentation team. Natalie Parker, the presentation committee head, held practices during the spring semester. These practices helped strengthen the presenter's professional skills. Members of the team helped by quizzing each presenter with hundreds of questions to prepare for the Q & A session at competition. With diligent preparation and rigorous studying, the presenters were prepared for every question that was asked.

In addition to presentation, the team also made a number of strides in other categories. Andrew LeBeau, Mitch Finnegan, and Jerrid Burdue worked together to create a final product that earned the team a 1<sup>st</sup> place finish at Regionals and an 10<sup>th</sup> place finish at Nationals. The aesthetics committee worked to develop a design using pigmented concrete that displayed the beauty of the National Parks. Despite not getting the chance to race at regionals due to weather, our dedication and hard worked paid off and was noticed by all at Nationals.

National Competition Breakdown	
Presentation	5 <sup>th</sup>
Final Product	10 <sup>th</sup>
Technical Paper	13 <sup>th</sup>
Races Overall	8 <sup>th</sup>
Women's Endurance	4 <sup>th</sup>
Men's Endurance	7 <sup>th</sup>
Women's Sprint	4 <sup>th</sup>
Men's Sprint	6 <sup>th</sup>
Coed Sprint	9 <sup>th</sup>
Final Results	8 <sup>th</sup>

## 2016-2017

For this upcoming year, the team plans to build upon the success and knowledge gained from *Denali*. The research and development committees will continue to make even greater strides than last year, while continuing to improve our concrete mix. The hull design committee will be innovating another groundbreaking canoe design that will be tested with a handmade prototype. Currently, the prototype is under construction. This year the hull design committee aiming to improve the turning ability of the canoe without sacrificing stream line tracking. By removing the bulge, adding a flat bottom, and more defined blade in the bow the hull design committee believes this will be accomplished. Credit to this year's innovative hull design goes to Anthony Peszek, a junior civil engineering student.

## Team Leadership

Returning for another year of leadership on the concrete canoe team is senior captain Taylor Wiegand. Taylor is a third year civil engineering student returning for another year on the team. Last year, she was the structural analysis committee head, presented at the regional and national competition, and paddled in the 4<sup>th</sup> places women's endurance and sprint races at Nationals.

Stepping into a leadership position as junior captain is Robert Herrick. Robert is a third year civil engineering student and last year implemented a new reinforcement in *Denali*. This year, Robert is Concrete Mix Head and is working towards developing a mix lighter than any year previous without any loss in strength.

## 2017 Regional Competition

Michigan Technological University will be attending the ASCE North Central Conference Regional Competition at Lawrence Technological University in Southfield, MI. The Michigan Tech team is very excited to bring innovative and advanced ideas to the competition.



## **2017 National Competition**

The ASCE National Concrete Canoe Competition will be held at the Colorado School of Mines in Golden, Colorado from June 17<sup>th</sup>-19<sup>th</sup>, 2017. Michigan Tech is working hard to earn the honor of representing the North Central Conference at the national level and place among the top finishers again.

## **We would like to thank the departments at Michigan Tech for their support!**

Civil and Environmental Engineering  
Mechanical Engineering – Eng. Mechanics  
Materials Science & Engineering

## **We would also like to thank our corporate sponsors for their generous help!**

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**Lastly, we would like to thank our friends, family, and alumni for supporting our team!**

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# Concrete Canoe Competition in a Nutshell

## Concrete Canoes? Nope, We're Not Kidding!

Each year the Michigan Tech Concrete Canoe Team, along with 200 other teams around the nation, designs and builds a concrete canoe which we take to a regional competition. Michigan Tech is a part of the North Central

Regional Conference, which includes teams from the University of Michigan, Michigan State, and Western Michigan University, among others. The winner of the regional competition then goes on to compete at the prestigious national level. Every year we choose a theme that resonates with the attitude throughout the team. The name of the boat, aesthetic design, display and presentation all tie into the chosen theme. The team works throughout the year and last year put in over 5000 man-hours before the regional competition.



## Wait...How Can Concrete Float?

Traditional concrete is a mix of cement, water, sand and gravel. To make the canoe we use very small (less than 1mm in diameter) recycled hollow glass spheres, instead of sand and gravel. This results in concrete that is actually lighter than water! This is important because at competition the canoe is submerged in water and must rise back to the surface. Teams are disqualified if it does not.

## So What Happens at Competition?

There are 4 parts to competition which are judged by a panel of seasoned engineers:

1. *Technical Paper:* The team writes a professional-quality design paper detailing the engineering behind our concrete mix proportions, management techniques, testing procedures, construction methods, innovations and sustainability.
2. *Technical Presentation:* A group of presenters summarize the Technical Paper into a presentation which can be no longer than five minutes. The challenge is to condense an entire year of work into a concise and dynamic presentation.
3. *Races:* There are five races: two-person Women's Sprint, two-person Men's Sprint, two-person Women's Endurance, two-person Men's Endurance, and a four-person Coed Sprint. Michigan Tech traditionally finishes among the top ten in races.
4. *Final Product:* The canoe is presented and judged for aesthetics and compliance against the official rules of competition which detail dimensions and materials allowable in construction. The judges also review how well the team's tabletop display, canoe stand and cross-section relate to the theme and contribute to an overall aesthetic.

**We truly love what we do! We put a lot of dedication and hard work into producing outstanding canoes each year, and we have fun doing it. We'd like to thank our current sponsors, families, and friends for their amazing support and we hope that you will consider partnering with us this year!**

**MichiganTech**



# MichiganTech

## CONCRETE CANOE TEAM SPONSORSHIP OPPORTUNITIES

The Michigan Tech Concrete Canoe Team has been growing larger, more organized, more experienced, and more independent over the recent years. It is these advances that have led to our establishment as a national power in the world of concrete canoeing. These results would not be possible without the dedication of team members and the support of our trusted sponsors.

We are personally asking you to assist us in our **goal of \$25,000 for the 2016-2017 competition year** to support another nationally ranked canoe. Donations of technical expertise, products, or funding of any sort will help lead us to this achievement. As tokens of our appreciation for your generosity, you will be recognized in the following ways based on your level of donation:

Level of Sponsorship	Donation Level	Recognition
Silver	\$50-\$250	- Company/Family name displayed on Race Day t-shirt
Gold	\$250-\$500	- <i>Silver sponsorship benefits</i> - Michigan Tech Concrete Canoe baseball hat
Platinum	\$500+	- <i>Gold sponsorship benefits</i> - Company/family name and logo displayed all year with the team's canoe on campus - Plaque with team picture sent to company

### Interested? Here's how you can help!

1. Make an online donation: <http://www.mtu.edu/giving/>
  - a. Click on "Make a Gift"
  - b. **Select the option "Please direct my gift as indicated below"**
  - c. **List "The Concrete Canoe Team" in the box**

OR

2. Send a check, made out to *The Michigan Tech Fund-Concrete Canoe*, to:

**The Concrete Canoe Team**  
**Michigan Tech University**  
**Civil and Environmental Engineering**  
**1400 Townsend Drive**  
**Houghton, MI 49931**

Please do not hesitate to ask any questions about the team. Contact information can be found below or please visit our team website at [www.cee.mtu.edu/asce/canoe/index.html](http://www.cee.mtu.edu/asce/canoe/index.html). Once again, thank you for your time and consideration and we look forward to hearing from you!

Sincerely,

Taylor Wiegand, Sr. Captain  
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(586) 206-2780

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## **CONCRETE CANOE TEAM**

### **SPONSORSHIP OPPORTUNITIES**

## **WHAT WILL MY DONATION BE USED FOR?**

Michigan Tech has a strong tradition of taking the entire team to competition. Each and every person puts in hours of their time throughout the academic year. The belief has been that every member earns a right to participate competition. This does, however, present a challenge when it comes to the team's finances as you can see here:

<b>ESTIMATED EXPENSES FOR 2015-2016</b>	
Regional Competition at Lawrence Technology University (transportation, lodging, 30 registrations @\$40/person)	\$7,500
National Competition at Colorado School of Mines (transportation, 20 registrations with lodging @ \$350/person)	\$12,500
Canoe and display expenses	\$3,000
Improvements (tools, toolbox, supplies)	\$1,000
Safety (PPE, life jackets, paddles)	\$1,000
<b>2016-2017 ANNUAL FUNDRAISING GOAL</b>	<b>\$25,000</b>

Past experience has taught us the cost of canoe and display construction is a mere fraction of the cost of getting the team to and from the competition sites. This year will be no different. The regional competition will be held in the spring of 2017 at Lawrence Technology University in Southfield, MI. The team's goal is to compete at the national competition this year, which will be held at the Colorado School of Mines in Golden, Co; a round trip distance of approximately 2,560 miles. As you can see from our estimated expenses, the team will spend upwards of \$20,000 just in competition expenses.

Please consider becoming a sponsor of the Michigan Tech Concrete Canoe Team. Questions about the team are always welcome, and if you are in the Houghton area, you are invited to come and see our progress. Thank you!