

# CONCRETE CHALLENGE

By Kim G. Nix, Managing Editor

On a warm spring day in April, engineering students from colleges around the Southeast descended on Lake Lurleen State Park near Tuscaloosa to race concrete canoes, build miniature retaining walls and throw concrete horseshoes. It was the American Society of Civil Engineers Regional Student Conference hosted by The University of Alabama's College of Engineering. Seventeen schools from Alabama, Mississippi, Tennessee, Georgia and Puerto Rico participated in the canoe races. The events at Lake Lurleen were just part of the 26-school southeastern gathering, which is the largest ASCE student conference in the nation.

With names like "Great Expectations," "The Theory," "Don't Panic," "Bullgator" and "Shock 'N AUwe," the canoes reflected the personalities of the students or had a connection with their school's mascot, slogan or catchphrase. The canoes had one thing in common, however. They all were made out of concrete.

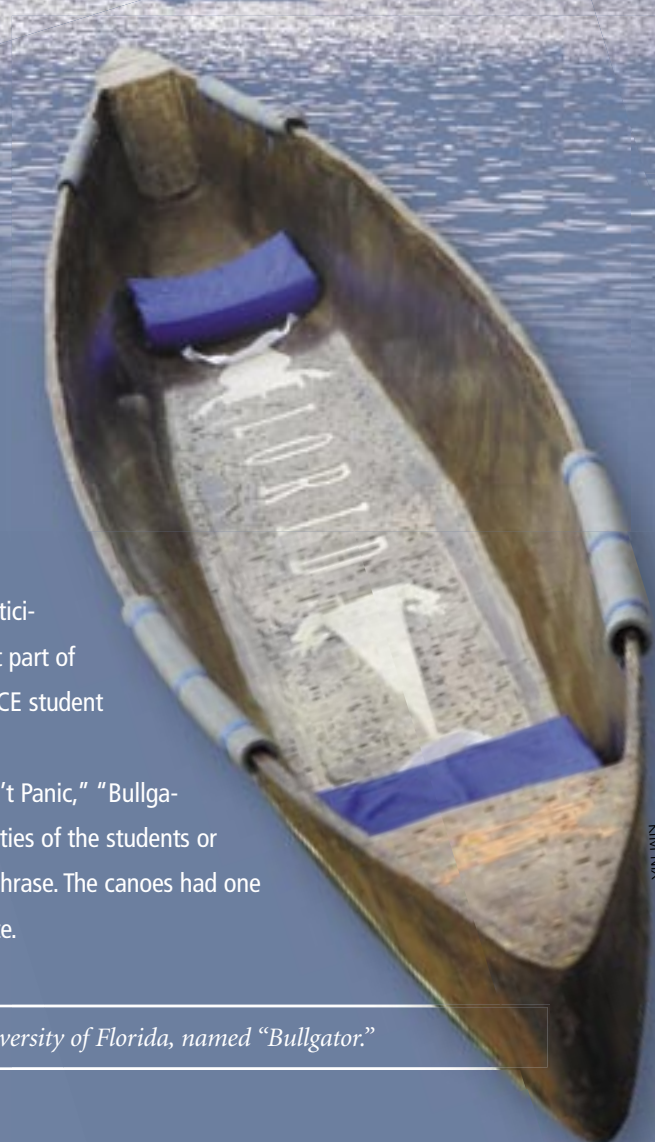
*The winning canoe from The University of Florida, named "Bullgator."*

## How Does It Float?



Everyone knows that concrete sinks in water, right? Well, a chunk of concrete would, but built correctly, concrete can float!

Water has a density of 62 pounds per cubic foot. Anything with a lower density will float. A concrete canoe—or an iron ship—will float as long as it weighs less than the water it pushes out of way—or displaces. Concrete canoes are designed to displace just enough water to keep four paddlers dry.



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## Event History

Concrete canoe building and racing has been around since the early 1970s, and the first national competition was held in 1988. Each year, winners of regional challenges compete in the national competition. This year's national competition was in Clemson, South Carolina, in June.

### The competition has several objectives, including the following:

- ▶ To provide civil engineering students an opportunity to gain hands-on, practical experience and leadership skills by working with concrete mix designs and project management.
- ▶ To build awareness of the versatility and durability of concrete as a construction material among civil engineering students, educators and practitioners, as well as the general public.
- ▶ To build awareness of concrete technology and application among civil engineering students, educators and practitioners, as well as the general concrete industry.
- ▶ To increase awareness among industry leaders, opinion makers and the general public of civil engineering as a dynamic and innovative profession essential to society.

## Challenges

If you're picturing a concrete canoe that's heavy and bulky, think again. These canoes are thin and sleek—at least most are! The challenge increases each year to build a better, faster canoe.

The canoes are built at their respective schools from specifications developed by the American Society of Civil Engineers. Basically, the canoe must contain one or more concrete mixtures that have a combination of portland cement and fly ash and/or slag as the binding material. Each team had its own way of constructing the canoe, usually over a form such as Styrofoam. Canoes must be between 20-24 feet and be able to hold four students.

The day before the competition each canoe was required to pass the "swamp test." This involves submerging each canoe in a tank of water. The ends of the canoe must break the surface of the water to show that it will float. If a canoe doesn't float, the team is allowed to make an adjustment and is given one more chance to pass the test. All but one of the canoes entered in

the competition passed the swamp test this year. After making an adjustment by adding Styrofoam, the lacking canoe was allowed to enter the races the next day.

## Creativity Counts

Students were also given the freedom to be creative in painting and naming their canoes. Some even placed lettering and designs on the inside of the structure. All design elements must conform to the regulations, however. The designs varied from sleek and sophisticated to bulky and primitive. Design is an important element because a "final product" judging is based on the overall aesthetic appeal of the canoe with deductions for items such as the inability to pass the flotation test on the first attempt, the use of tape as a repair material for non-accident related damage, and non-compliance with the rules and regulations.

Although the canoe racing is the most enjoyable portion of the competition for students and spectators, the final score is determined by scores from the design paper, an oral presentation, the final product judging and the races.

## The Race is On

While constructing a canoe that is both lightweight and efficiently designed is a challenge, the students also faced the difficulty of paddling the canoe against a time clock. Some were more adept than others, having practiced or possessing personal paddling experience.

The day's competitions included two-women and two-men slalom races as well as two-person and four-person sprints.

During the races the rivalry from several schools borders on that usually experienced by more traditional collegiate sports such as football and basketball. But, it's a friendly rivalry, as evidenced by the cheers from the entire beach crowd when the last canoeists paddle across the finish line.

At the day's end, overall racing winners were The University of Florida, Florida Institute of Technology and Vanderbilt University. Overall winners of the canoe competition, which includes the races, design paper and oral presentation, were The University of Florida in first place, The University of Alabama at Huntsville in second place and the Florida Institute of Technology in third place. The University



An Auburn University student makes repairs to the school's canoe, "Shock-N-AUwe."

of Florida represented the southeast in the national competition in June.

In addition to the host school, The University of Alabama, state schools that competed in the concrete canoe races included Alabama A&M, The University of Alabama at Huntsville, and Auburn University.

The University of Alabama at Huntsville has consistently had a strong showing in the concrete canoe competition, representing the southeast region 13 times in national competition. The team holds five national titles.

## Perfect Setting

Lake Lurleen was the perfect setting for the races, with the course set up on the portion of the lake parallel to the beach area. Swimming was prohibited during the event, but otherwise regular activity was permitted at the park.

Safety was strictly enforced with all canoeists required to wear life jackets. The Alabama Marine Police patrolled nearby to keep other boats away from the venue and to help in case of an emergency.

Other ASCE events held at Lake Lurleen were a concrete horseshoe competition, where students made their own horseshoes and competed according to standard rules and regulations, and a geotechnical competition where students constructed miniature retaining walls.

It was the largest event ever held at Lake Lurleen State Park and Manager Mike Storm and his staff worked for several months with students and staff from the University to plan the day. Parking was the biggest challenge, but the planning paid off and the event went smoothly.

The University of Alabama plans to make a bid for the national concrete canoe races in the near future. You can bet that Lake Lurleen will be ready for the national spotlight. 