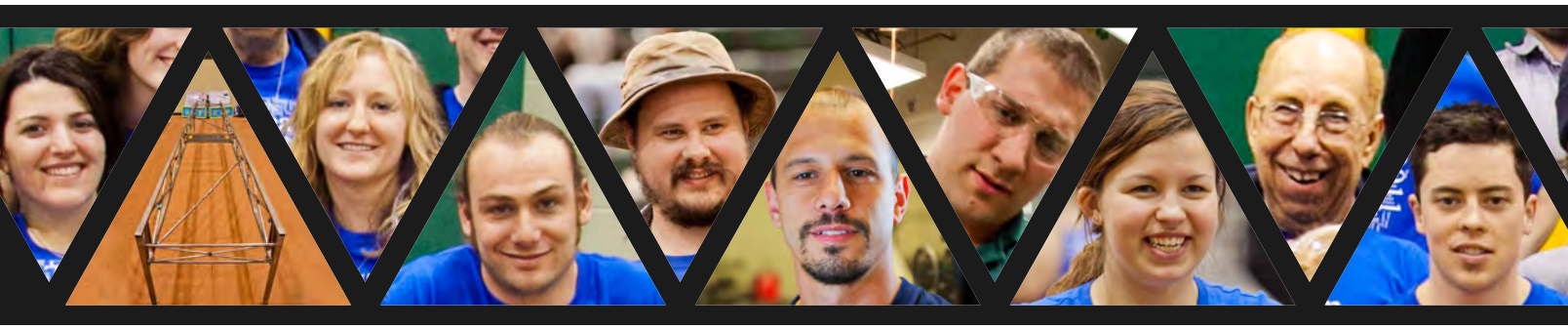
To be able to build what we design — that makes us first-class engineers.

— Pauline Fusco

Team co-captain Jennifer Holland welds part of the framework for this year's steel bridge effort in preparation for the regional competition. The photos on the following pages reflect the anxiety, euphoria and teamwork the students experienced while dominating the regional competition at the University of Alaska Anchorage in April.

BRIDGE to ANYWHERE



Story by LJ Evans, photos by Todd Paris

Regionally speaking, the UAF team was tops at the 2011 Student Steel Bridge Competition. Students from the College of Engineering and Mines won first place overall and in five of six individual categories: efficiency, stiffness, economy, lightness and construction speed.

Each year, students design and build a scale model steel bridge that meets that year's specifications. They must strictly adhere to a set of complicated rules in the bridge's design and assembly. The teams are then judged on how quickly, efficiently and well they build their bridge model during the competition, as well as on the design, strength and aesthetics of the structure.

After proving themselves best in the Pacific Northwest in April, the team moved on to Texas for the national competition in May, where they competed against 48 other teams and won first place in the economy category and seventh place overall.

Team members were Nicholas Brehm, Gordon Dufseth, Pauline Fusco, Jennifer Holland, Jeromy Jones, Louis Landry-Michaud, Aaron Simpson, Greg Smith, Aubrey Swallows, Julien Tessier-Lessard, Stephanie Young and Jason Zottola. Professor Leroy Hulsey and Adjunct Professor Wilhelm Muench were the team advisors. The annual competition is sponsored by the American Society of Civil Engineers and the American Institute of Steel Construction.

UAF alumni in this story: Nicholas Brehm, '11; Pauline Fusco, '11; Jeromy Jones, '11; Wilhelm Muench, '04; Greg Smith, '11; Stephanie Young, '11

My biggest surprise at UAF was that the students actually build all the parts of the bridge themselves, working with power tools in the shop.

— Louis Landry-Michaud, exchange student, Quebec

I suddenly understood what they're talking about in steel design class. It was all real to me in a way it never had been before.

—Jennifer Holland, team co-captain

All the team members were so focused that at regionals, when Jeromy dropped a bolt, Julien caught it in midair. For us these things all happened in slow motion when in reality they were split seconds.

—Stephanie Young, team co-captain

I step back, I let them decide. I want them to be accountable. They need to call this theirs, not mine.

—J. Leroy Hulsey, team advisor

at nationals
1996

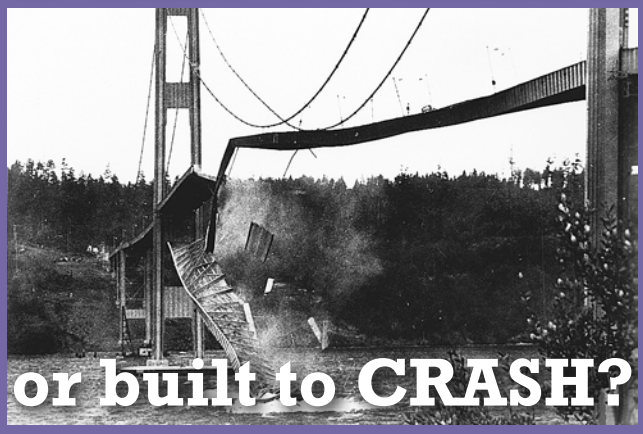
2003
Won regionals
6th at nationals

Won regionals
6th at nationals
2005

2008
Won regionals
8th at nationals

Won regionals
7th at nationals
2011

Built to LAST



or built to CRASH?

One of the most spectacular bridge failures of the 20th century was the 1940 collapse of the 5,939-foot-long Tacoma Narrows Bridge, in Washington state, just four months after its ribbon-cutting ceremony.

The bridge used a new design concept, intended to be flexible and less expensive than previous suspension bridges. But it was nicknamed Galloping Gertie almost immediately because of the rolling, corkscrewing motion the bridge developed in response to winds. Motorists driving across the central span reported feeling like they were on a roller coaster. Though the undulation was unexpected and unusual, officials still thought the bridge was safe.

They were wrong. On Nov. 7, winds in the Tacoma Narrows Gorge rose to 42 miles per hour. The bridge began to oscillate more and more violently until finally it broke apart. People were lucky that day, and no one was injured. The only fatality was a dog named Tubby, who refused to get out of the car when his owner had to abandon it; the car eventually fell into the waters below.

It's hard to identify spectacular bridge successes because usually the well-designed and well-built bridge just quietly stands there, doing what it's supposed to. California's magnitude 7 Loma Prieta earthquake of Oct. 17, 1989, offers an example by comparing what happened to the Golden Gate Bridge vs. the Oakland Bay Bridge, both of which were completed in 1936. Though separated by only a few miles, the upper deck of the Bay Bridge collapsed, killing one, while the Golden Gate Bridge suffered no observable damage.

Each time an earthquake tumbles a bridge — or doesn't — engineers analyze what happened and why. Sound science and solid construction are what get you safely to the other side.

For more information and links to other bridge stories, visit **www.uaf.edu/aurora/**.